TOWARDS A VOLUMETRIC CITY

by

Ho Kwan Yip

B.A. Architectural Studies
University of Hong Kong, 2007

Submitted to the Department of Architecture
in partial fulfillment of the requirements for the degree of

Master of Architecture
at the
Massachusetts Institute of Technology
February 2012

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ABSTRACT

The Ground is dead. In extremely densed urban area, the single ground do not have the luxury of space to accommodate programmes besides circulation. Other urban components such as elevators, bridges, underground passage are also circulatory oriented. The building mass have grown volumetrically and becomes thicker while the ground remains relatively thin and planar.

In Hong Kong having its urban density ranking the highest in the world, its grounds have undergone a prolong struggle for appropriate reinvention. This city of commerce has favored an emergence of hyper-rational logic that permits the realization of some utopian proposals including the Corbusien plan. Such logic has also formed a "Bowl Shape" transverse-section from the mountain to the harbor, brutally revealing the differences in real-estate value across the section.

The thesis takes the opportunity to reinvent a new ground - a datum - which reorganizes the commercial value distribution, reinvents generic typologies and at the same time liberates the natural ground. New cityscapes can be designed above and below the new datum which permit the architecture and architect to reclaim the "dead" ground. The Ground is alive.

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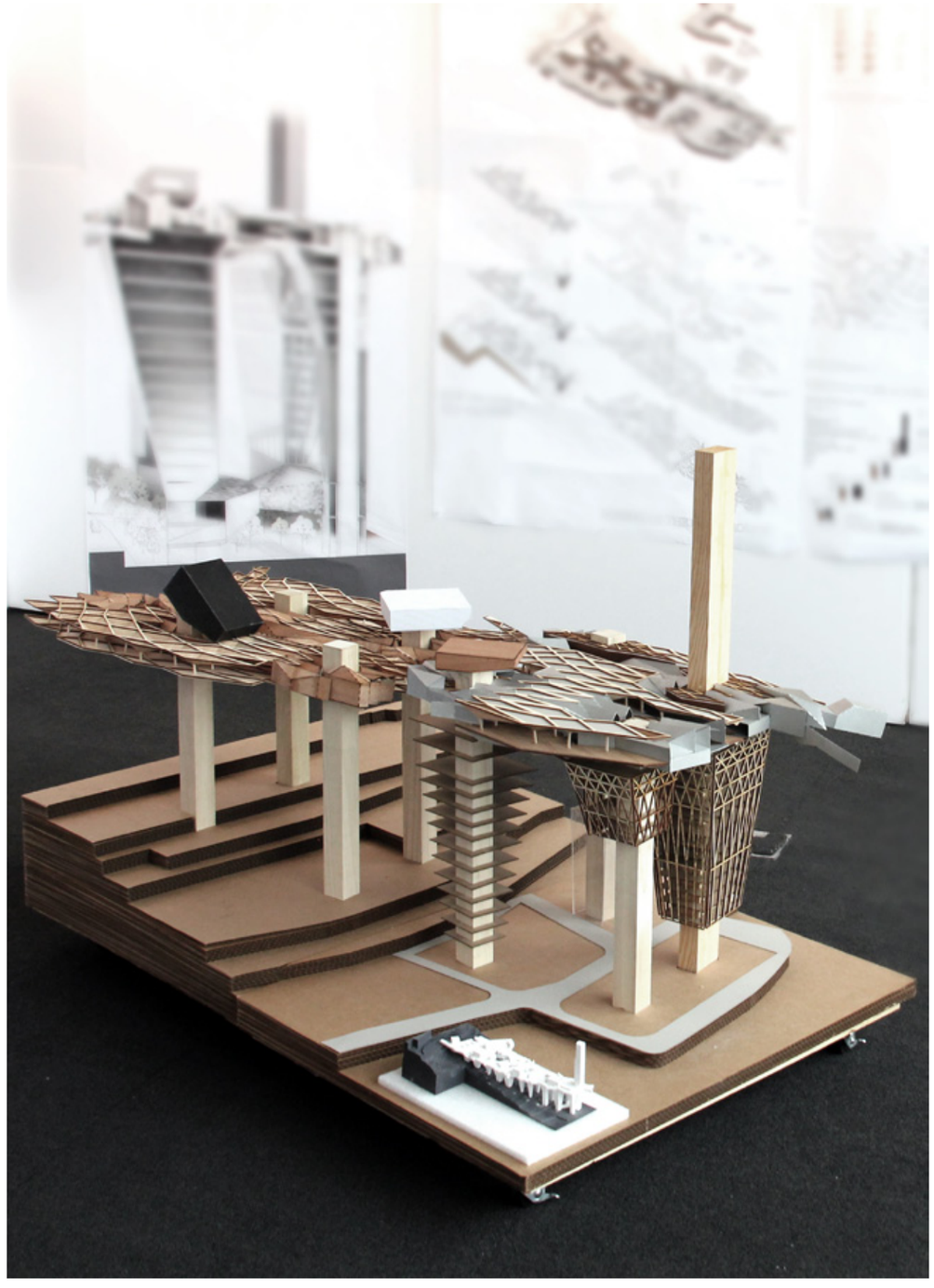


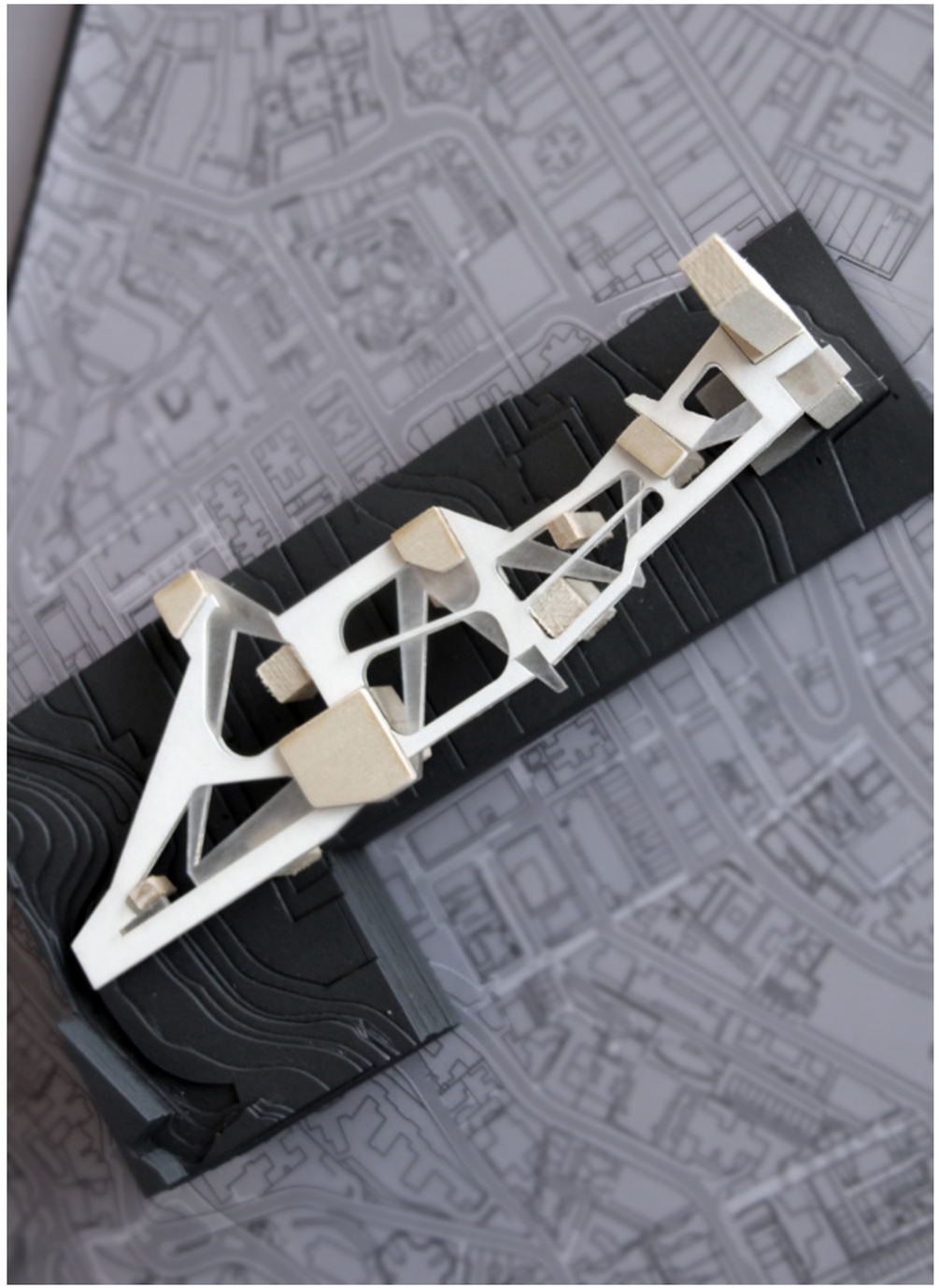
PREFACE

The Ground is dead.

The Ground is a datum that we seldom challenge until the density of the city becomes so high that exceeds the capacity of the ground. The ground do not have space to accommodate programmes other than circulation. New typologies are introduced to cope with this extraordinary density. Elevator becomes the vertical ground. Underground and podium levels serve as the sub-connectors between buildings. However, these inventions are subsidiaries and principally affiliated to the existing ground. They cannot perform by just their own existence.

Hong Kong is the city with the highest urban density in the world. While its grounds have undergone a prolong struggle for appropriate reinvention, Hong Kong is city that prioritizes its economical development, resulting in the emergence of a hyper-rational logic that permits the realization of some utopian proposals including the Corbusien plan. This logic has also formed a "Bowl Shape" transverse-section from the mountain to the harbor, brutally revealing the differences in real-estate value across the section.

The thesis attempts to challenge the reliance on a singular primary ground in high-dense urban context. The primary ground defines the level of publicness of the buildings and further determining their internal organization, formal quality and envelop design. This bias has become more generic and restrictive in the urban environment. The building mass have grown volumetrically and becomes thicker while the ground remains relatively thin and planar. This disjunction of thickness results in limiting the organization of the buildings and furthermore the city itself.



The thesis takes the opportunity to reinvent a new ground - a datum - which reorganizes the commercial value distribution, reinvents generic typologies and at the same time liberates the natural ground. New cityscapes can be designed above and below the new datum which permit the architecture and architect to reclaim the “dead” ground.

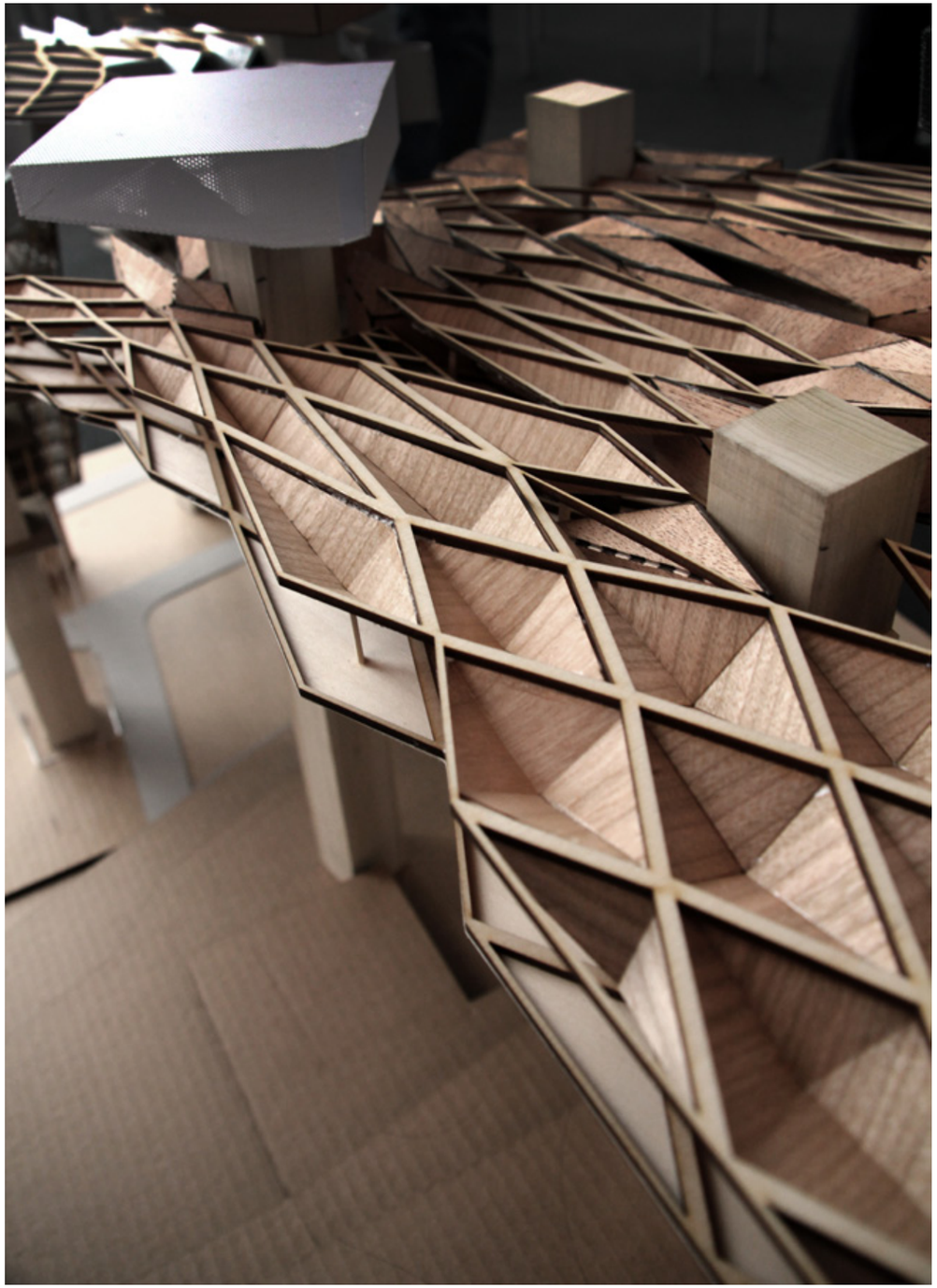
The Ground is reclaimed.

The Politics of the Ground

Starting from the ancient Greek temple design, architects have been struggled with defining the relationship between ground and architecture. “Plinth” was introduced to resurface the ground for situating the column, statue and monument. Such a ground-related invention is not unique throughout the architectural history. In 1926, “Pilotis” was created by Le Corbusier to display another attitude toward the ground treatment. He proposed the creation of a whole new ground in the form of elevated platform with almost minimal connections to the existing ground in order to help establishing a stronger building figure. In the Radiant City proposal, the “natural ground” was even considered as “ the enemy of man” as “dispenser of rheumatism and tuberculosis”. On the other hand, Mies Van der Rohe took an approach which echoed with the ancient Greek temple through introducing “Motif”.

Motif helped to construct the “micro-context” for the building to sit on with the elimination of the trace of heaviness related to the ground. Ground was considered almost as an opposing entity in architecture which separation and reconstruction were favored.

Until 1960s, people started to reconsider the potential of constructing the ground into a habitable condition. It can be a positive space with a distinct relationship with the architecture instead of an empty negative leftover space. Carpenter Center by Le Corbusier in 1962 illustrated such a shift of perspective on the ground. The ramp bisecting the building demonstrated the penetration and integration of the ground open space into the building design. Meanwhile, Oscar Niemeyer dealt with the potential of the ground differently. Instead of treating the ground as an indefinitely continuous flat surface, he tried to give it a precise form which can be explained in the design of Headquarters of French Communist Party. The idea that the ground can be the central subject became even more prevailing in Emilio Ambazy’s design. The ground was utilized as the camouflage for the building to diminish the figure of the architectural object. In the Spatial Retreat House, the ground was converted into a figure through his application of stage design strategy. Peter Eisenman in some respects also tried to develop the figure of the ground but from a very different approach. He was inspired by Colin Rowe, in “Collage City”, argued that the ground of the city “is not a neutral surface but only the topmost stratum of dense layers made up of different historical traces.” Eisenman experimented to reveal these traces embedded in the ground and



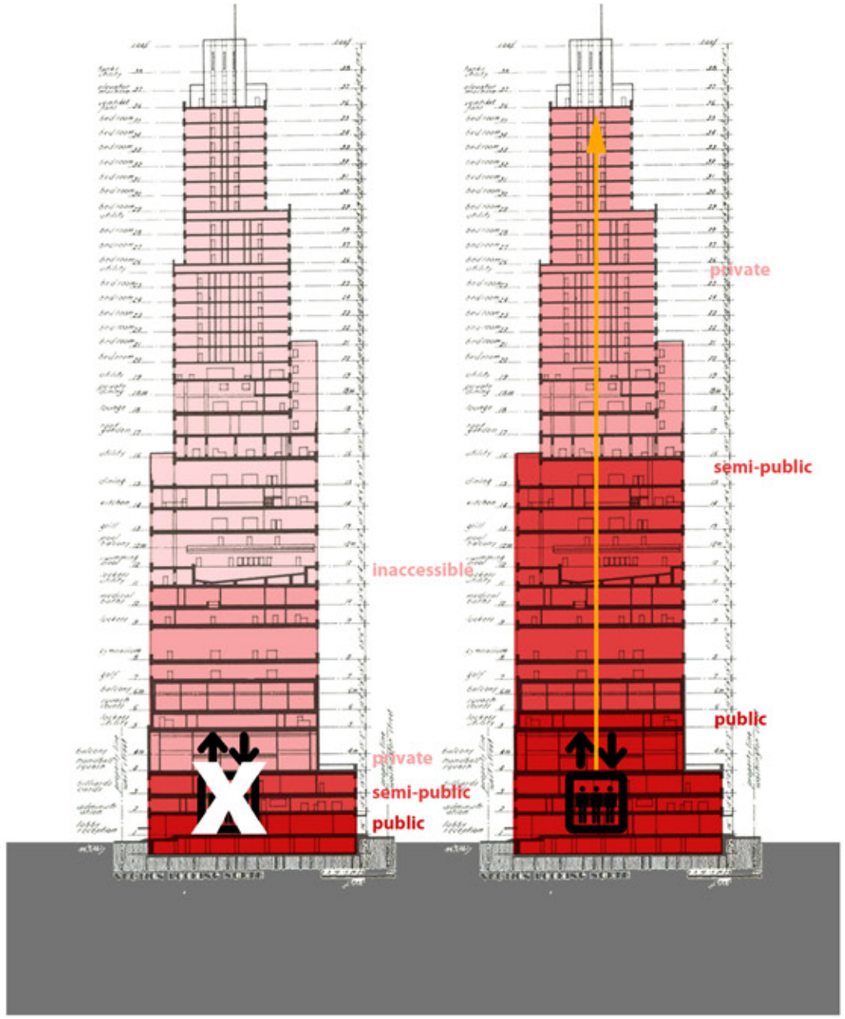
employ them as design generation rules. In his IBM Social Housing project, the historic and present contents in the ground were strategically intertwined to formulate the new ground. “The architectural figure of the building gradually disappears as an autonomous object, while the ground, as an archaeological archive, increasingly becomes a figure.” His endeavors to establish new concepts such as “figured ground” and “grounded figure”.

In the 1990s, OMA demonstrated a new interpretation of the ground. Ground as a circulation medium described the sequences to experience the architecture. The concept of continuous ground required the building to have a different organizational logic at the same time opened up new opportunities for the ground to become a programmable surface that became part of the functional spaces. It is hard to neglect the influence of the concept of “fouction oblique” in understanding the discourse of continuous ground. “The function of the Oblique” was introduced by Paul Virilio and Claude Parent which suggested a new order for the ground. Instead of rigid horizontal and vertical planes, an inclined plane can enhance the instability and “encourage a constant awareness of gravity, bring the body into a tactile relationship with the building”. Movement was facilitated in this circumstance.

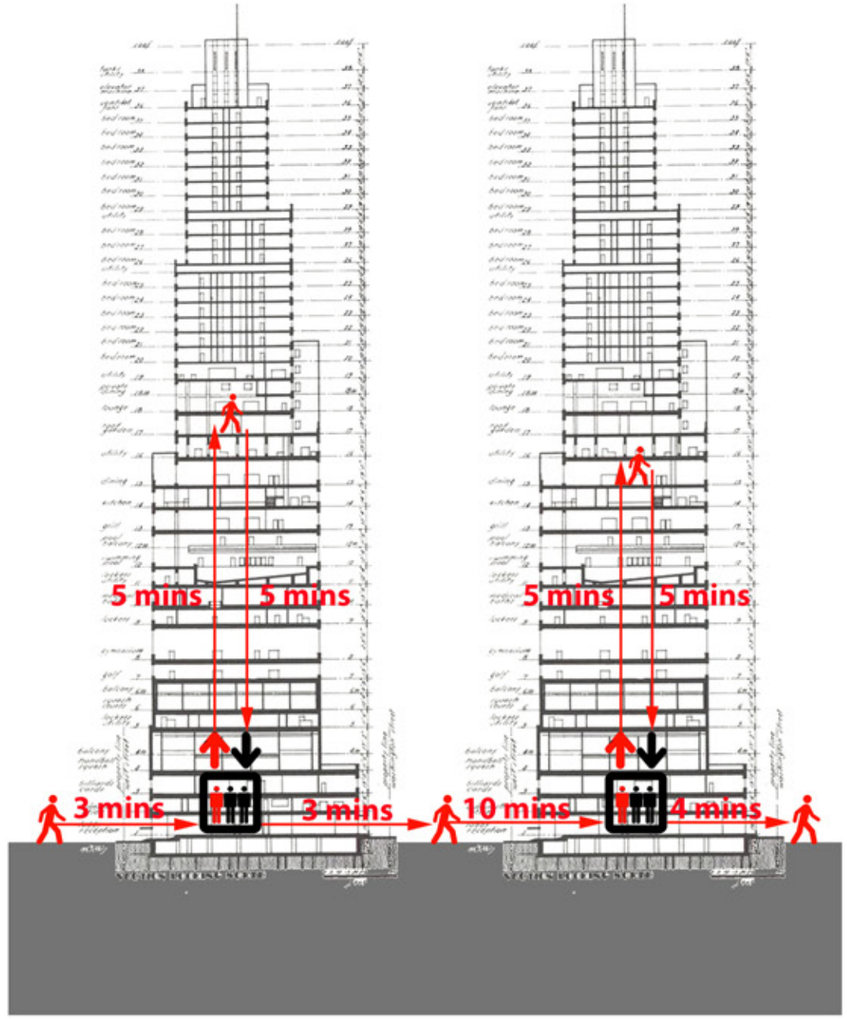
CONTENTS

RESEARCH

INSPIRATION - What's wrong with the ground?

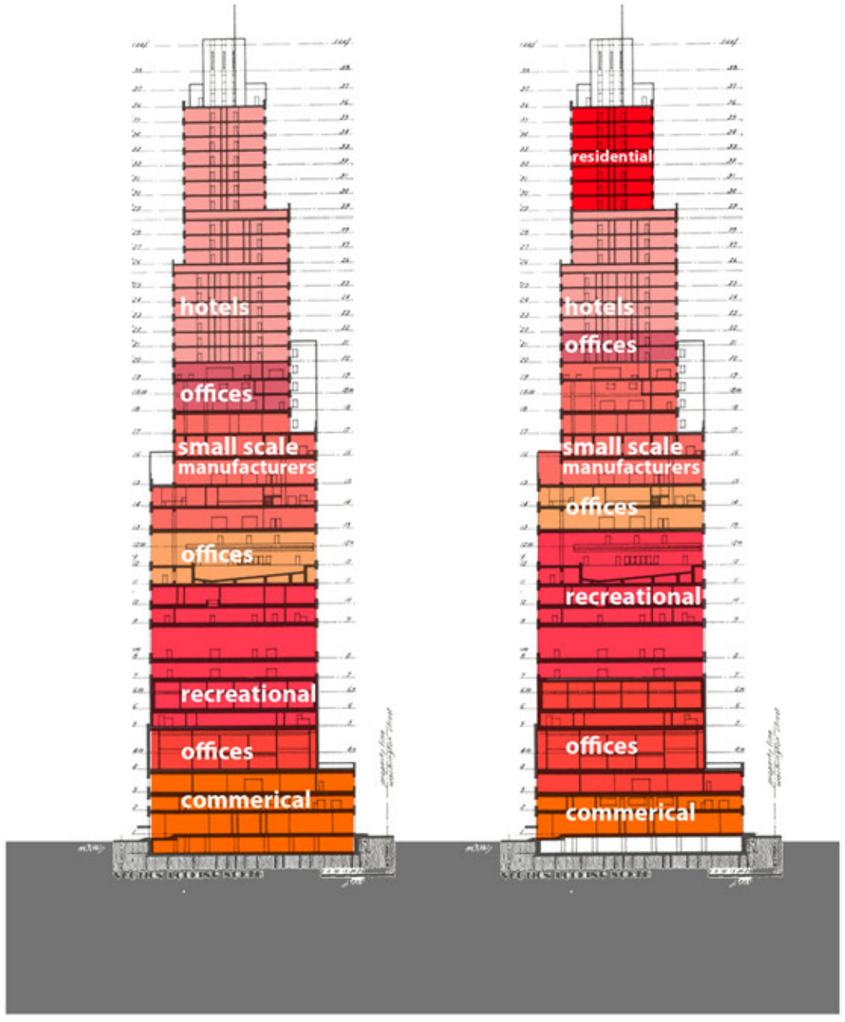


how does the vertical ground (elevator)
change the situation?

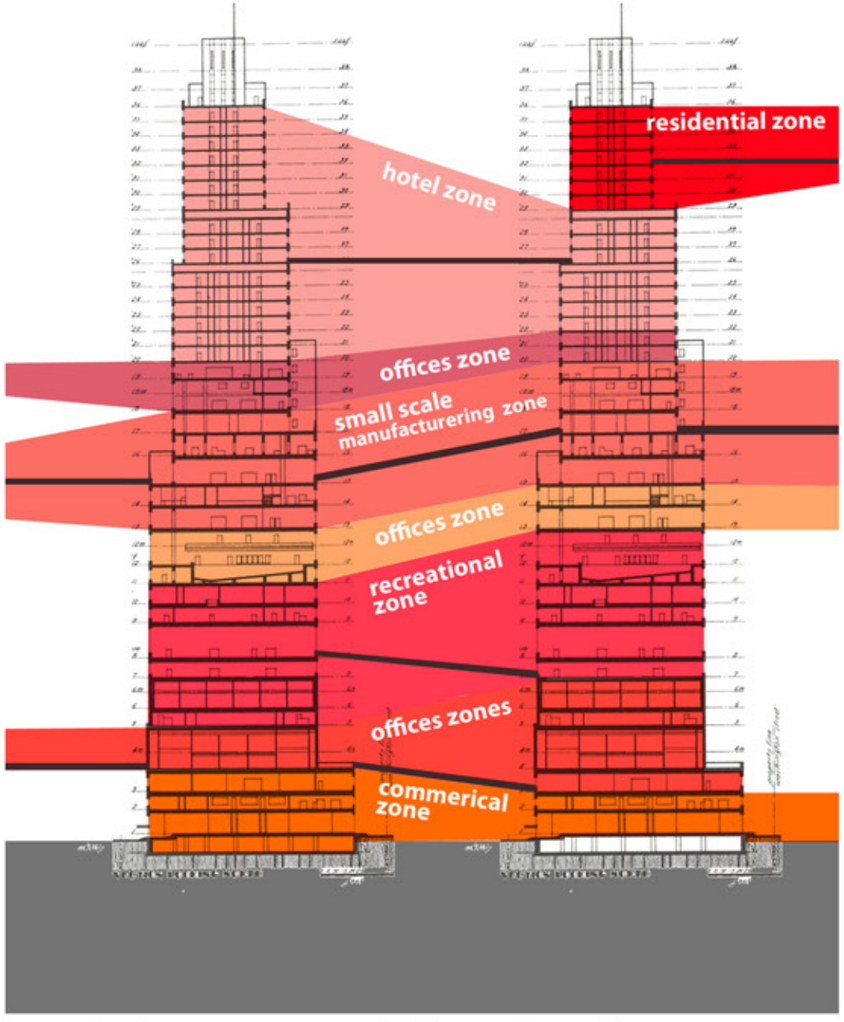


how long does it take to travel?
what if the ground is just not enough?

INSPIRATION - What's wrong with the ground?

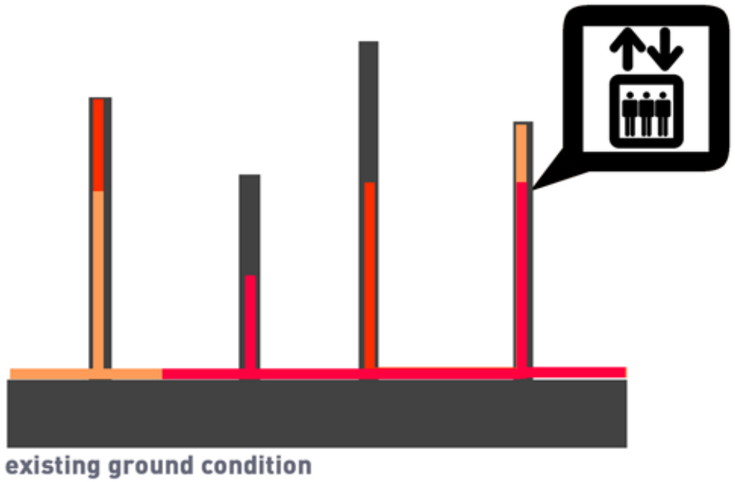


mix-used tower suggest the potential of
vertical zoning

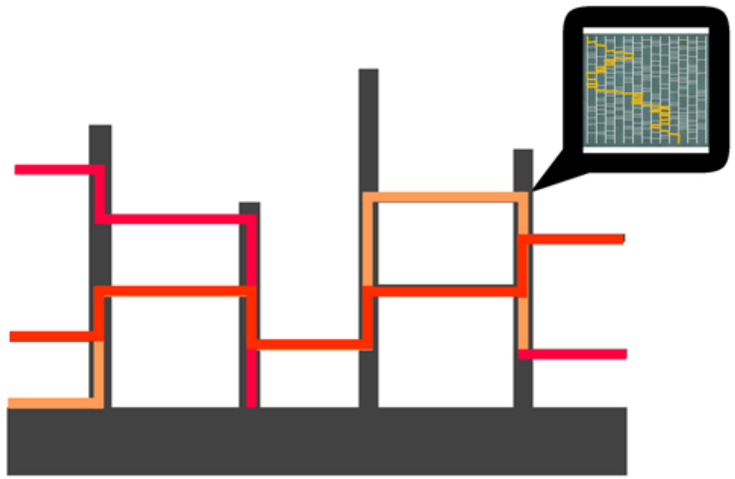


how do the new grounds formulate the
vertical zoning?

INSPIRATION - Potential of the ground?



existing ground condition



proposed ground condition

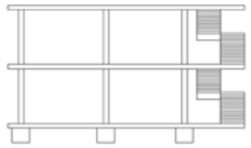
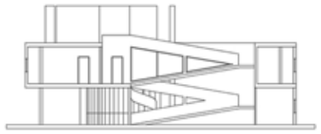
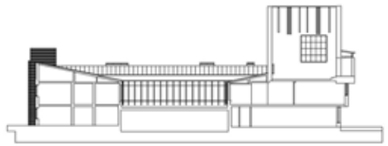
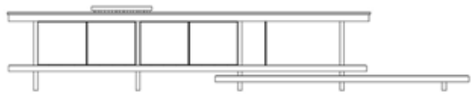
the natural ground will not be the only connecting medium for the buildings. This will greatly transform the operation of the city

how will the new ground suggest some new ground typologies?

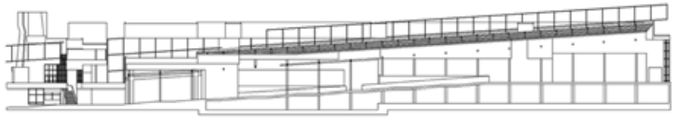
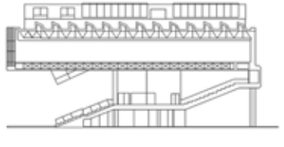
RESEARCH 1

Learning from the Section

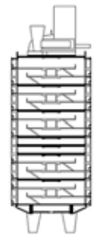
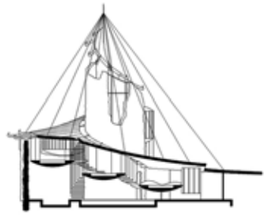
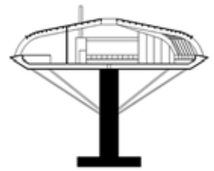
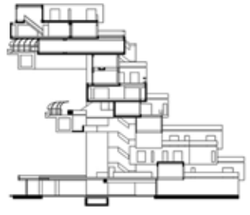
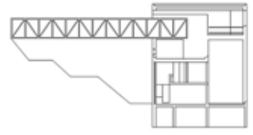
How does architecture meet the ground?

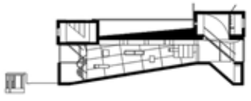






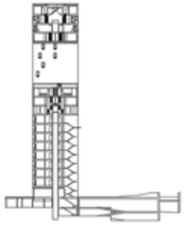
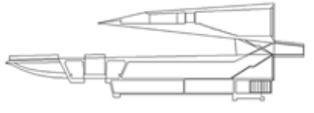


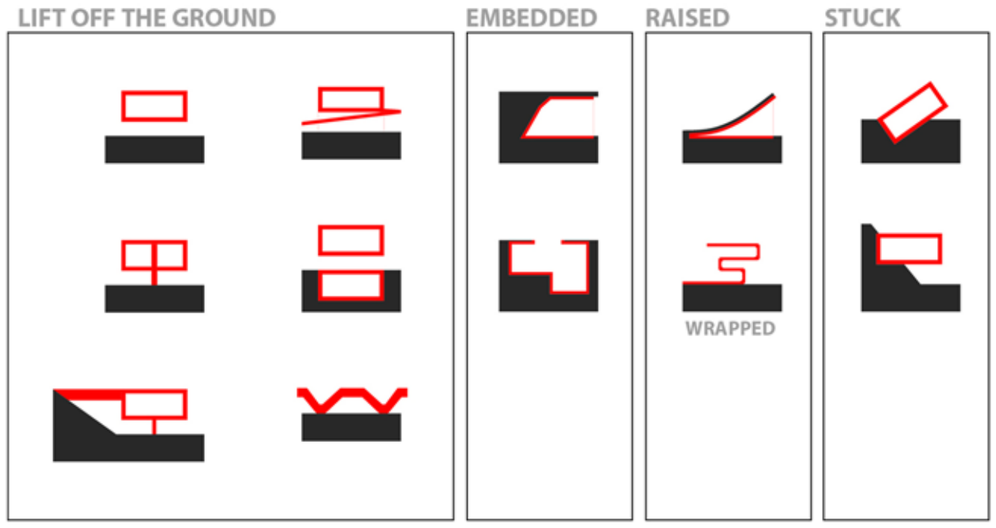


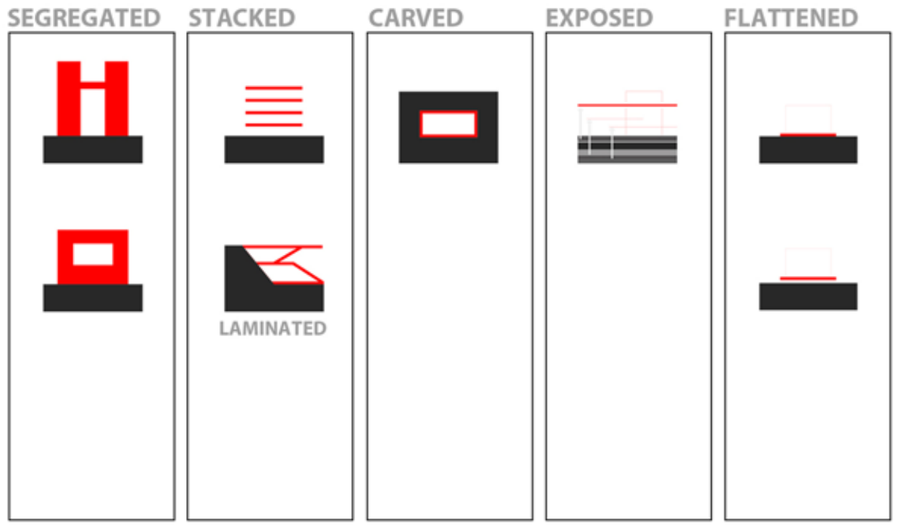









GROUND MANIPULATION TYPOLOGIES





PLINTH

a plinth is the base or platform upon which a column, pedestal, statue, monument or structure rests. It redefine the ground for them to sit on.
The plinth usually rests directly on the ground, or "stylobate".

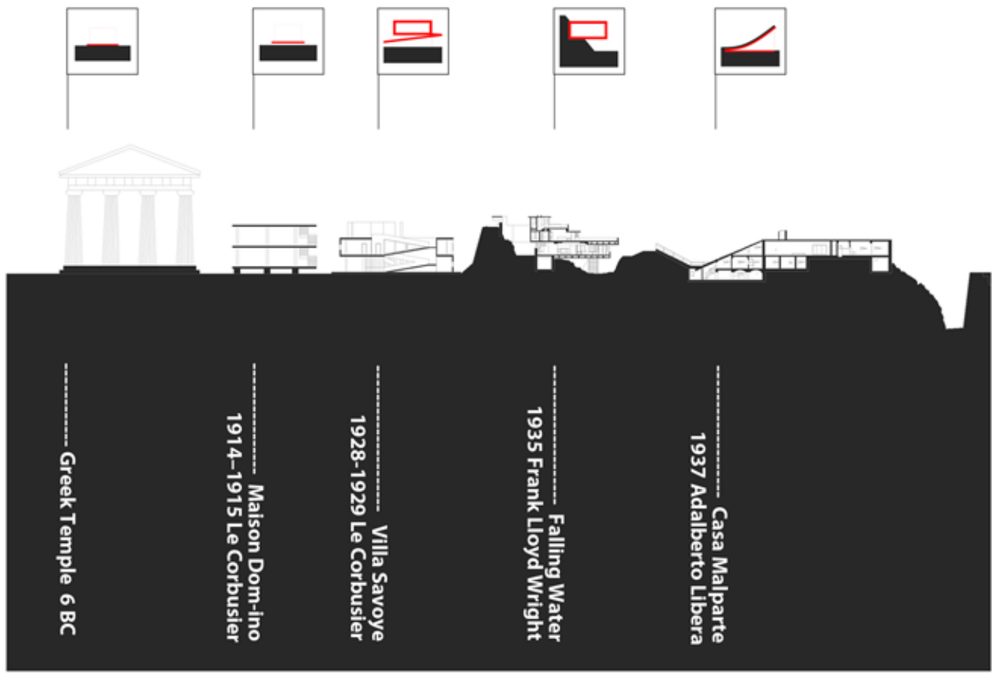
Arthur Schopenhauer

architecture is the art of overcoming heaviness or gravity and the resistance of matter

The invention of elevators (1852)

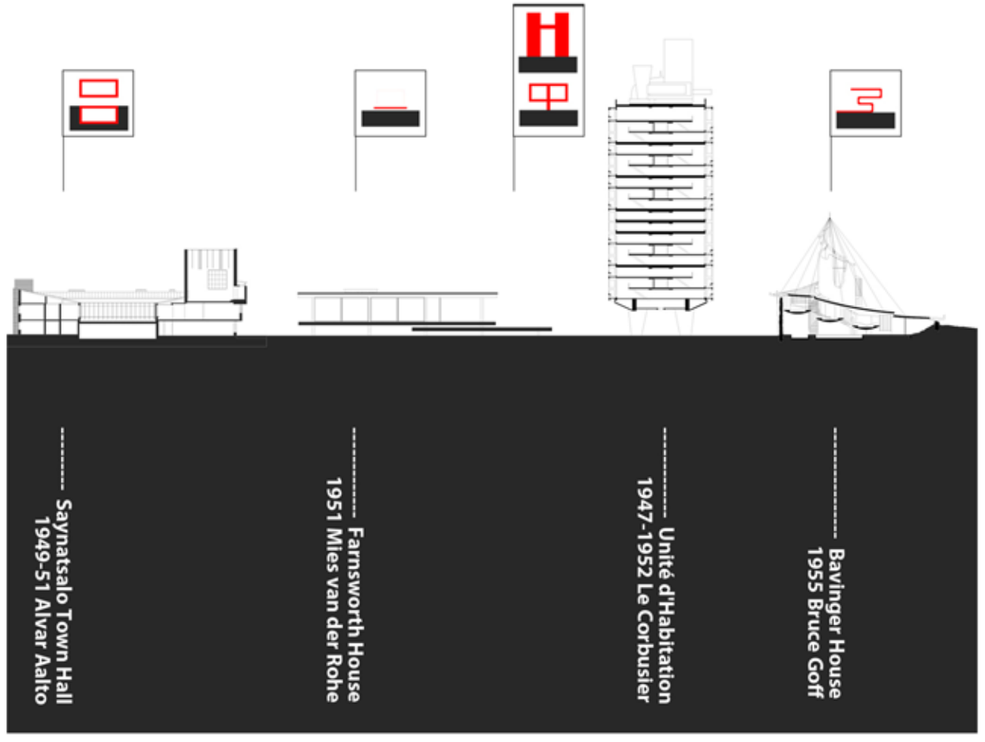
- vertical ground

TIMELINE FOR ARCHITECTURE VS GROUND



Heinrich Wölfflin

the ground has to do with a basic "formlessness"which the will, as a vital force immanent in things, must overcome, the "force of form" is to pull us up from this formless state, against which all of life is the struggle.

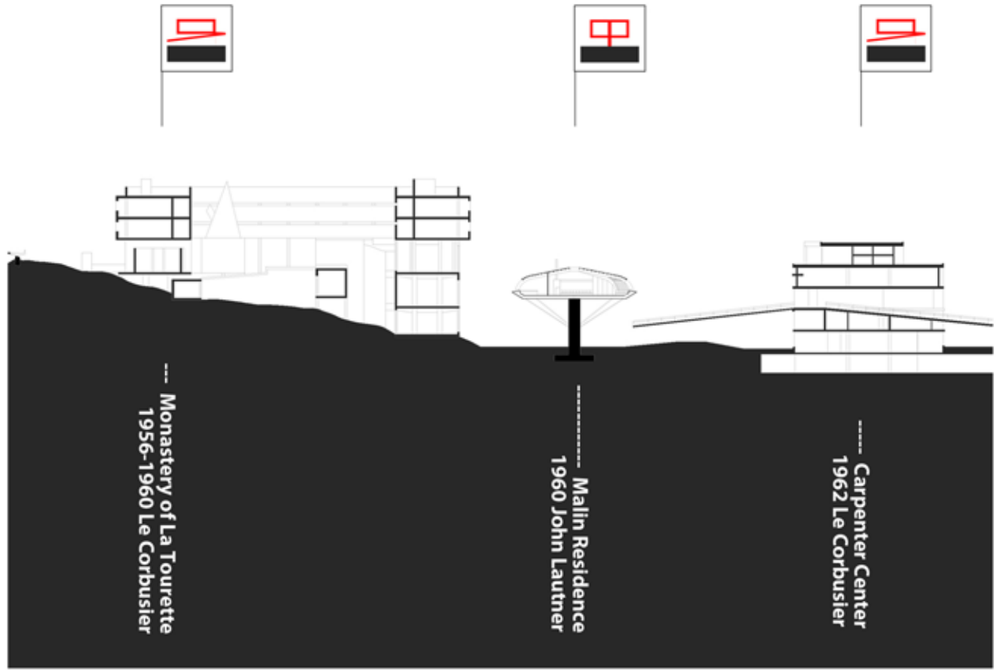


Le corbusier

"artificial sites" in 1933 in the Radiant City, dismisses the "natural ground" as a "dispenser of rheumatism and tuberculosis", declares the natural site to be the "enemy of man"

PILOTIS

pilotis are supports such as columns, pillars, or stilts that lift a building above ground or water.
the pilotis (or piers) raise the architectural volume, lighten it and free a space for circulation under the construction.

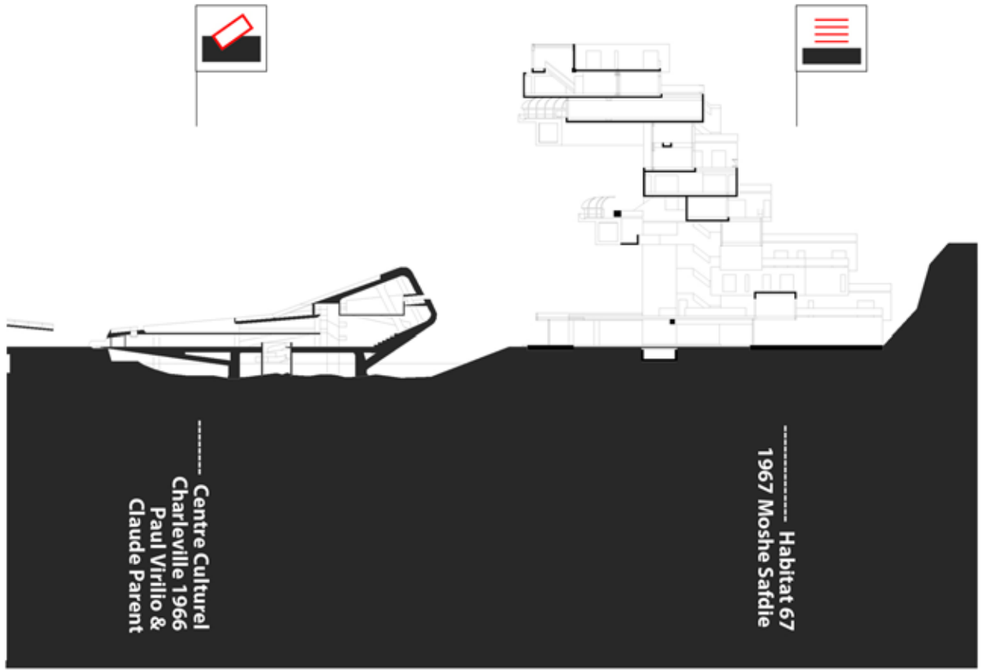


MOTIF

eliminates all traces of the heaviness

Claude Parent
Paul Virilio

formed the Architecture Principe group "fouction oblique" a new conceptual module for the production of Urban Community, change the existing ground into a different order by making the new city emergy "at an incline" for the old one



OBLIQUE

The Function of the Oblique

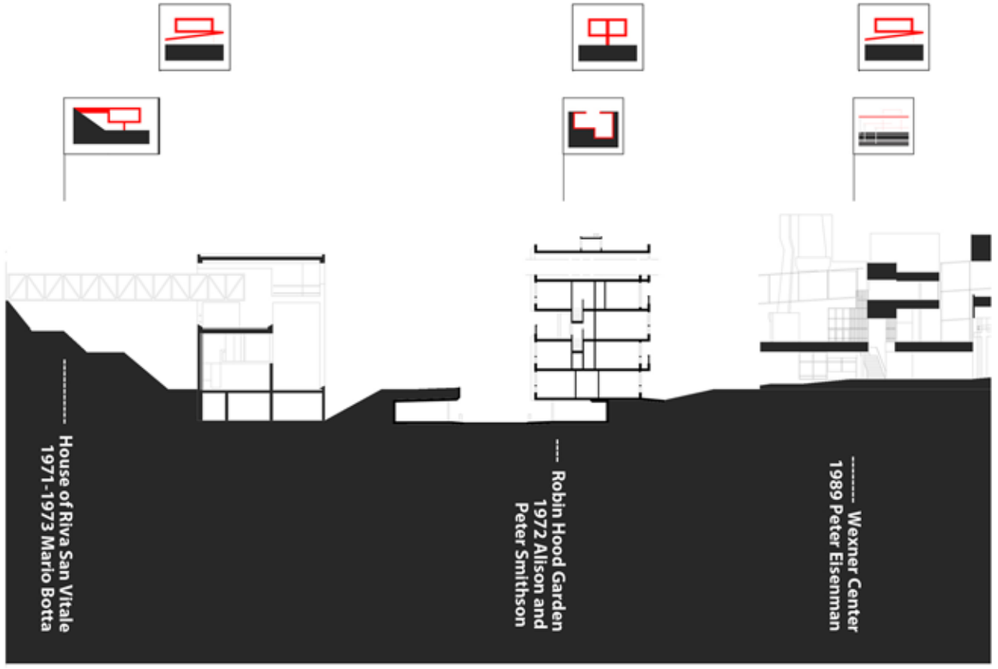
Oscar Niemeyer

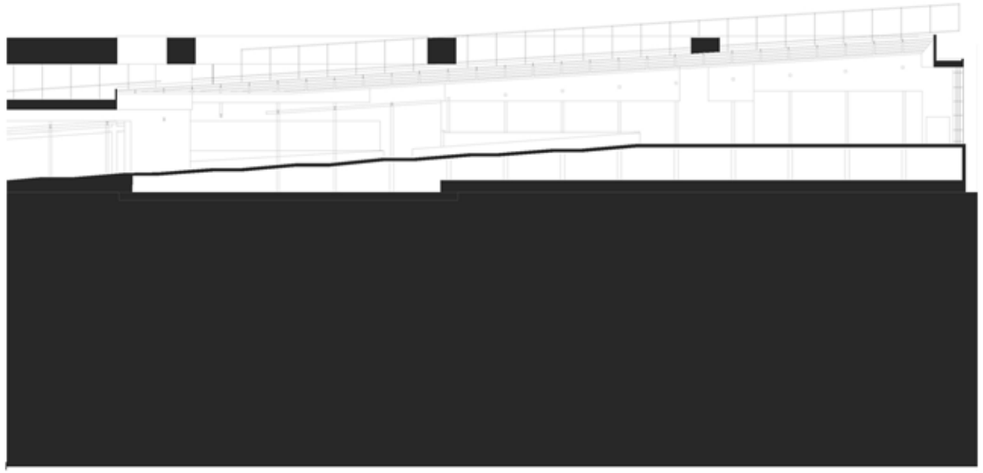
gives the ground (normally indefinitely continuous) a distinct form, scale & place

Water Pavilion" - the ground ultimately becomes a central subject of architectural research

Peter Eisenman

Emancipation of the ground from the status of a foundation for architecture to an "archcitecture in its own right" first acquires form in Peter Eisenman, "Cities of Artificial Excavation" - unlike the previous example which the ground is developed from the figure, Eisenman try to develop the figure from the ground, He established concepts such as figured ground and grounded figure

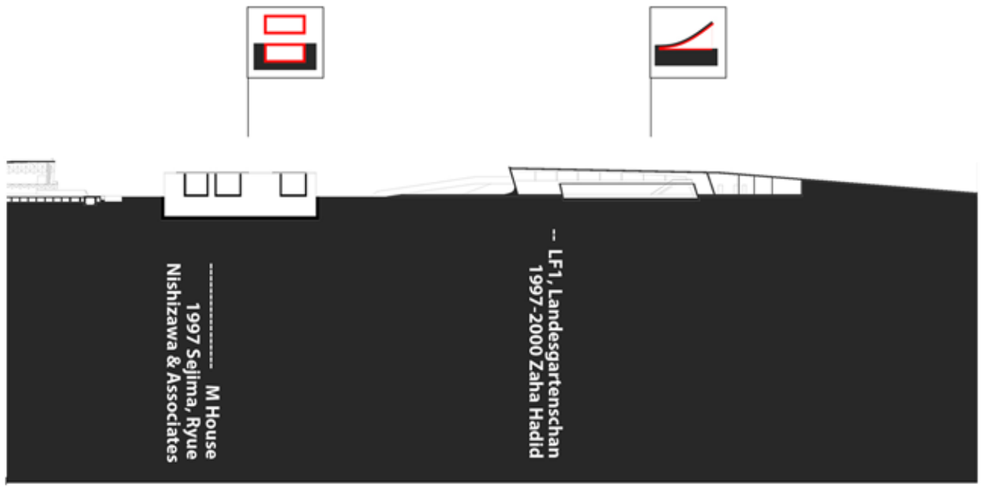




-- Villa Dall' Ave
1991 OMA
-- Convention
Center 1990
OMA

---------- Kunsthal
1992 OMA


-- Yokohama Terminal
1994-2002 FOA

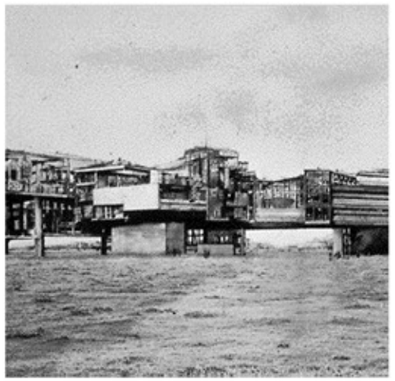

-- LF1, Landesgartenschau
1997-2000 Zaha Hadid
---------- M House
1997 Sejima, Ryue
Nishizawa & Associates

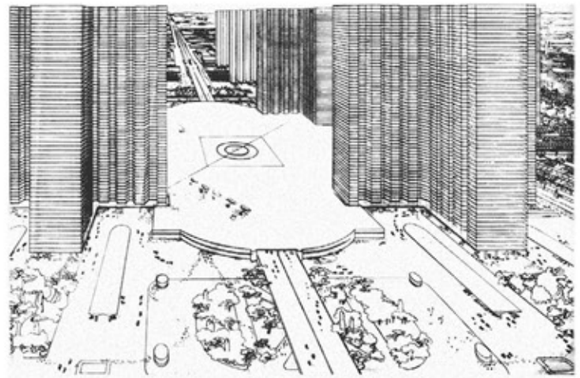
Marshall House
2005 Denton Corker
Marshall
Biblioteca de mexico
jose vansconselos
2003 Diller Scofidio+
Renfro
Boston ICA
2002 Diller Scofidio+
Renfro

Clyfford Still
Museum 2006 Diller
Scofidio+ Renfro
Mirador
2005 MVRDV

RESEARCH 2

Precedent Studies

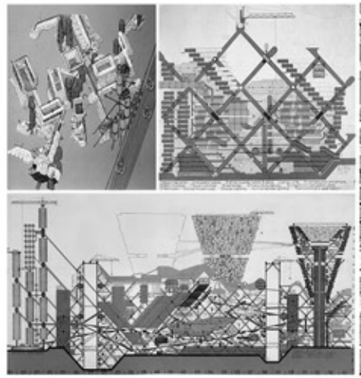


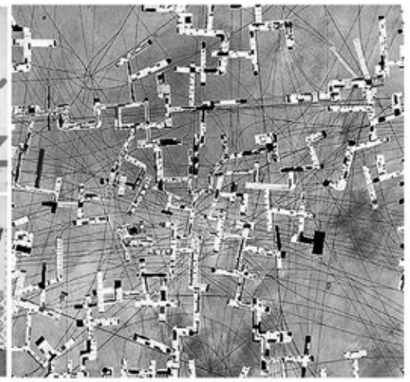


LE CORBUSIER RAIDANT CITY

THE METROPOLIS OF THE FUTURE

HONG KONG SKYBRIDGE SYSTEM IN CENTRAL



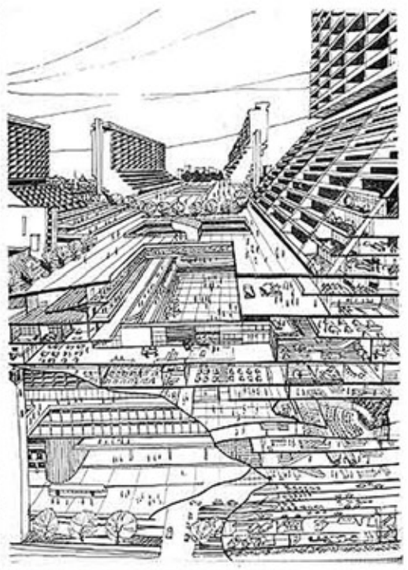


ARCHIGRAM PLUG IN CITY

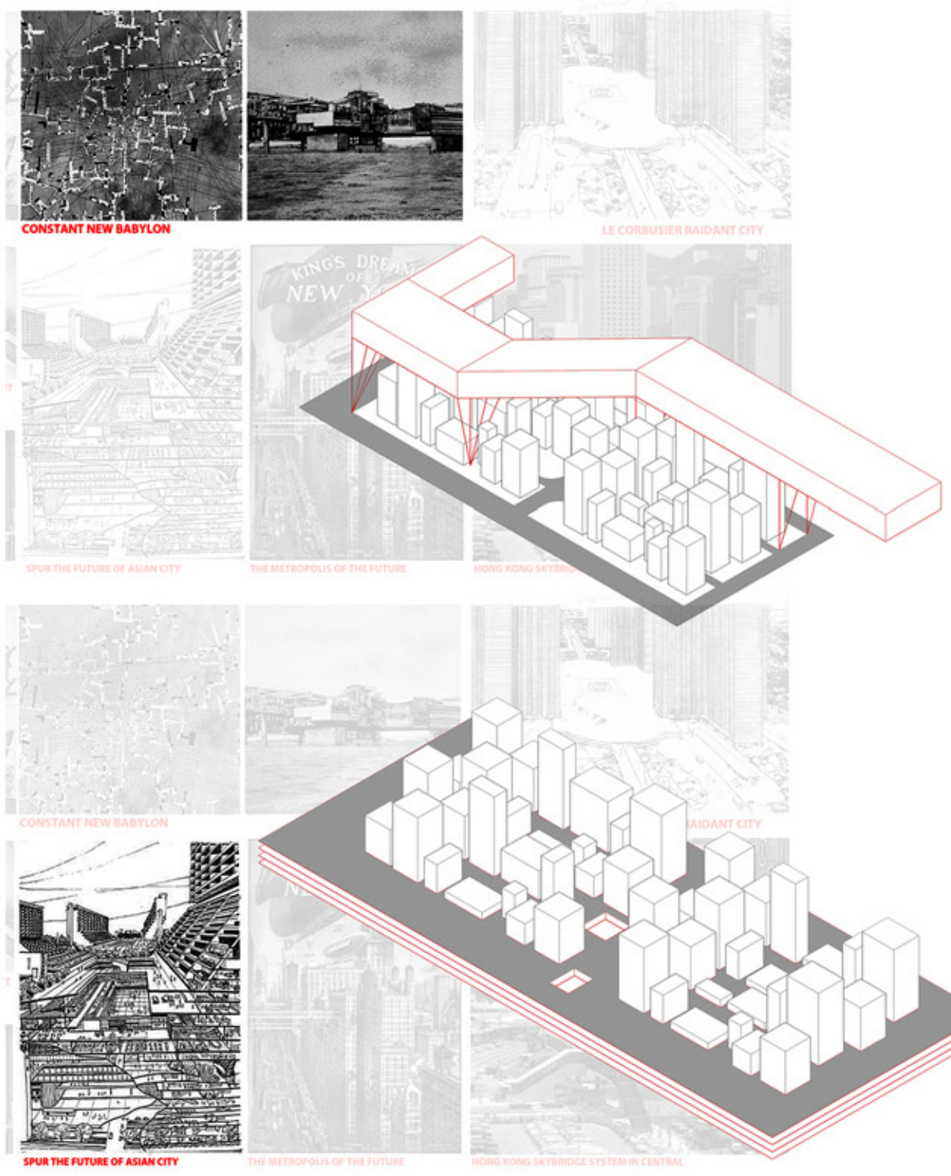
CONSTANT NEW BABYLON

SUPERSTUDIO CONTINUOUS MONUMENT

FRANCISCO MUJICA FUTURE CITY



SPUR THE FUTURE OF ASIAN CITY



NEW BABYLON by CONSTANT

RELATIONSHIP WITH THE NATURAL GROUND

OPPONENT,
REPLACE THE NATURAL GROUND

STRATEGIES

MINIMAL CONNECTION TO THE GROUND

PROBLEMS

WORSEN THE NATURAL GROUND
BY CONDITION CASTING SHADOW etc

THE FUTURE OF ASIAN CITY by SPUR

RELATIONSHIP WITH THE NATURAL GROUND

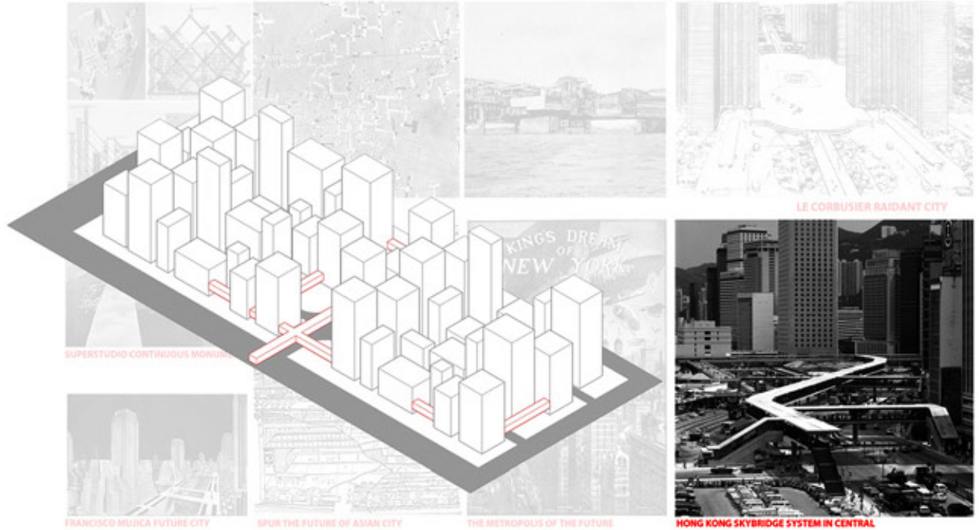
DIRECT STACKING UP THE NATURAL GROUND

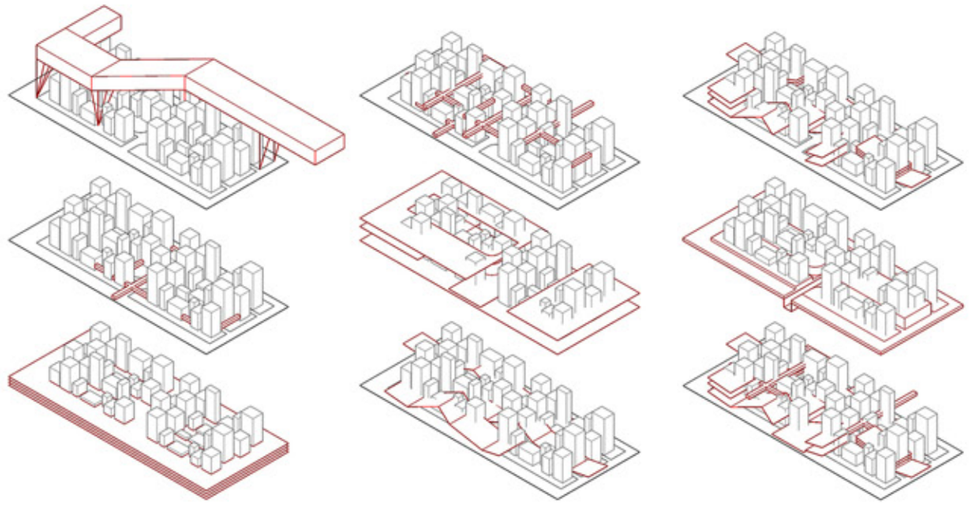
STRATEGIES

EACH LEVEL HAS A SPECIFIC PROGRAM AND TARGETED AUDIENCE

PROBLEMS

MOST OF THE FLOORS ARE TOTALLY UNDERGROUND





HK CENTRAL SKYBRIDGE SYSTEM

RELATIONSHIP WITH THE NATURAL GROUND
SUBSIDARY TO THE NATURAL GROUND

STRATEGIES
LINEAR AND LITTLE CONNECTION TO THE NATURAL GROUND MAINLY FOR CIRCULATION

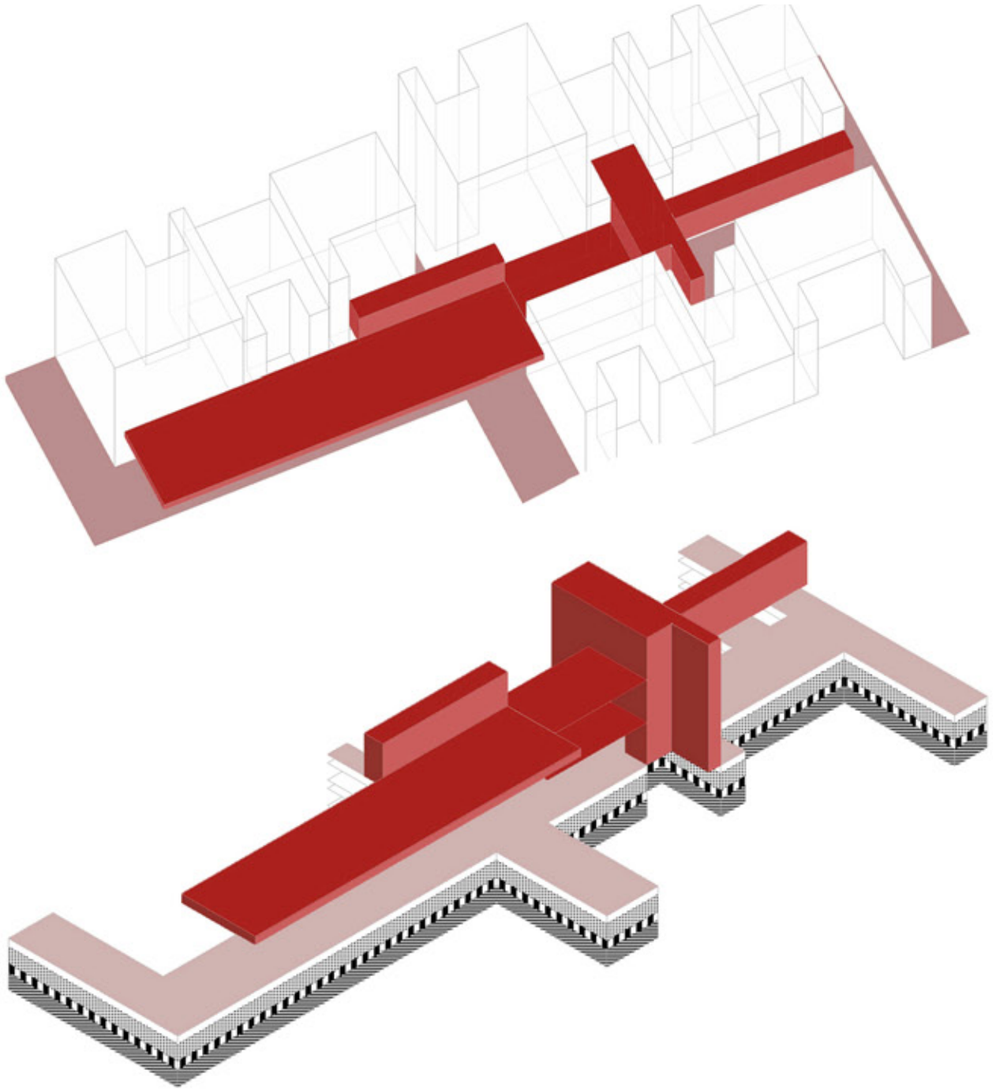
PROBLEMS
PRAGMATIC SOLUTION FOR DIVERSING HUMAN FLOW

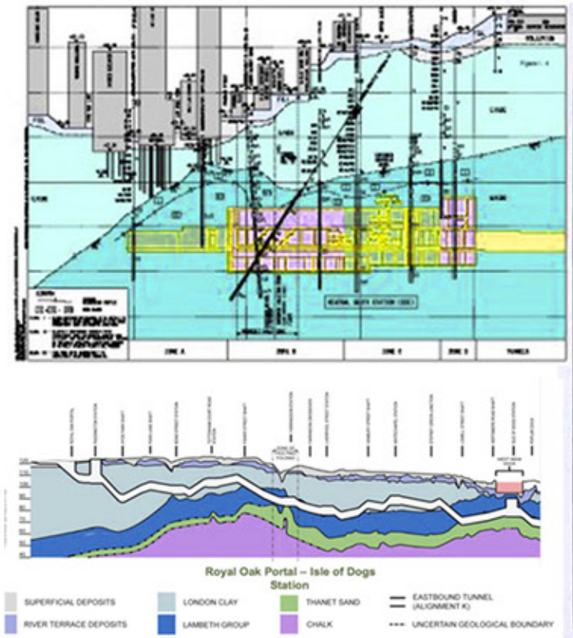
PLUG-IN CITY
THE METROPOLIS OF THE FUTURE
FUTURE CITY
THE FUTURE OF ASIAN CITY
CONTINUOUS MONUMENT

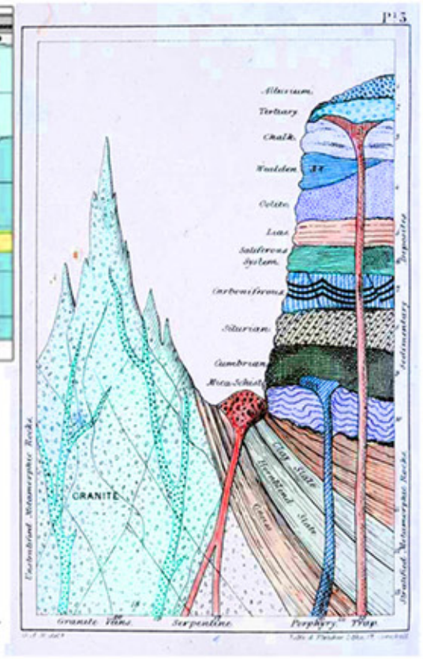
DESIGNED BY: SUPERSTUDIO
DATE : 1969

AN ARCHITECTURAL MODEL FOR TOTAL URBANIZATION

LEARNING FROM GROUND STRATIFICATION







WHAT ARE THE GROUNDS THAT NEED TO BE VOLUMETRIC?

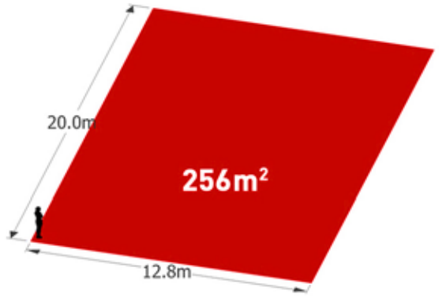
CRITERION FOR SITE SELECTION

HIGH DENSITY

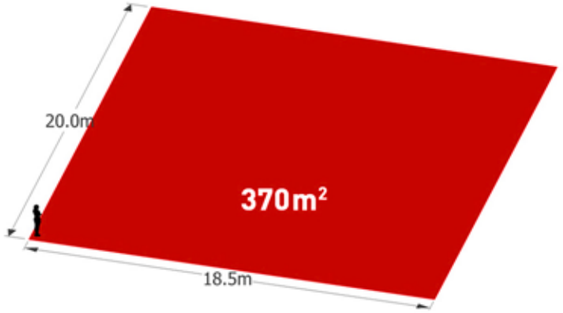
27394 /km²
MANHATTAN

17140 /km²
TOKYO

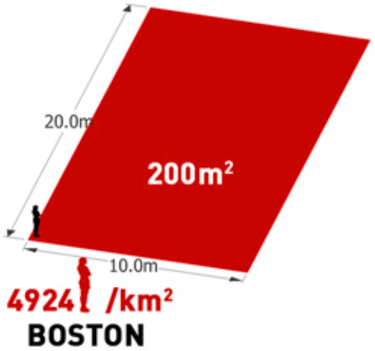
130000 /km²
HK-MONGKOK



3972 /km²
TORONTO



2747 /km²
SHANGHAI

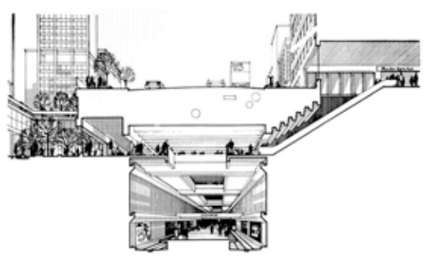


4924 /km²
BOSTON

MULTI-GROUND SITUATION

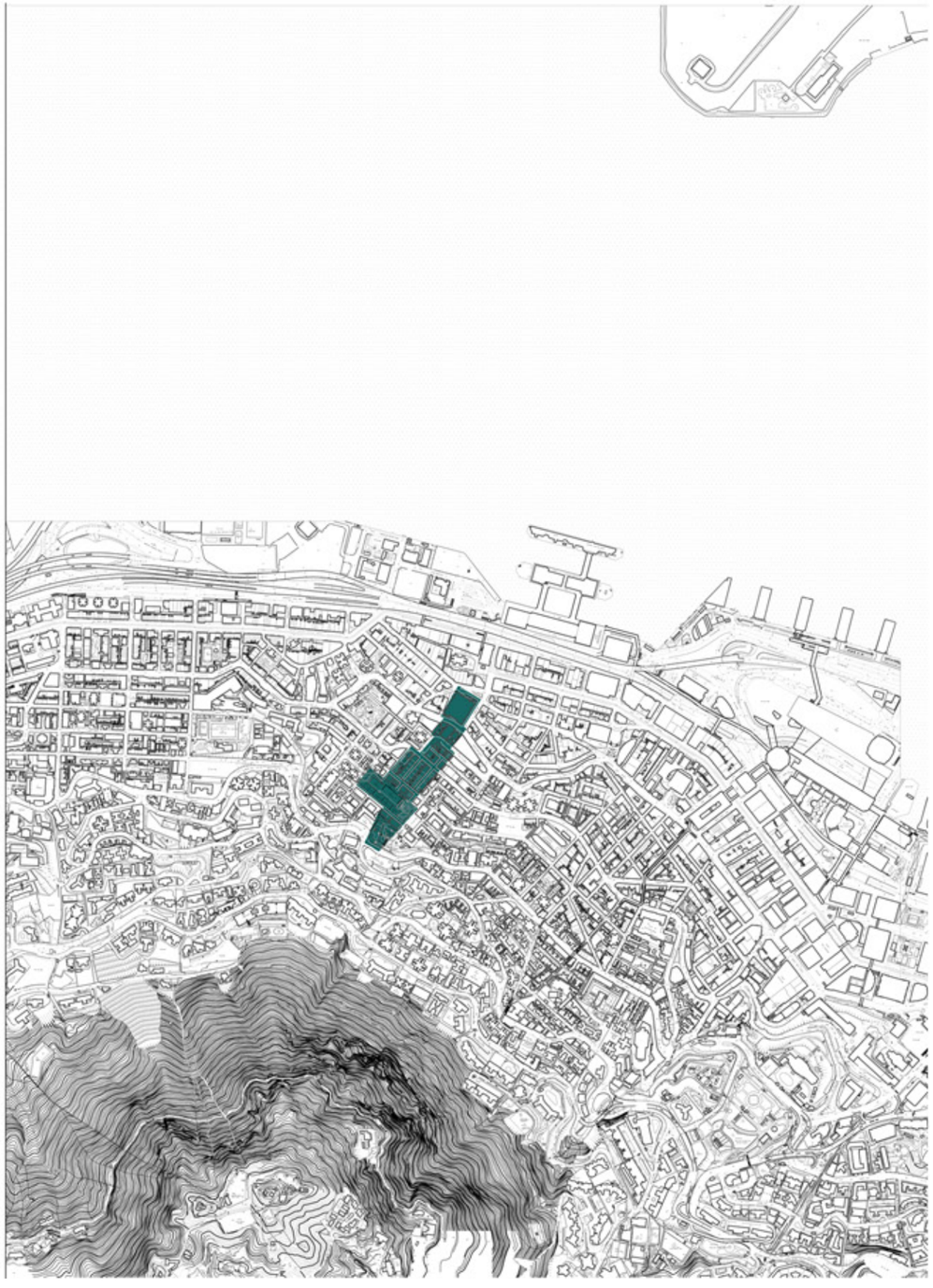
UNDERGROUND SHOPPING ARCADE

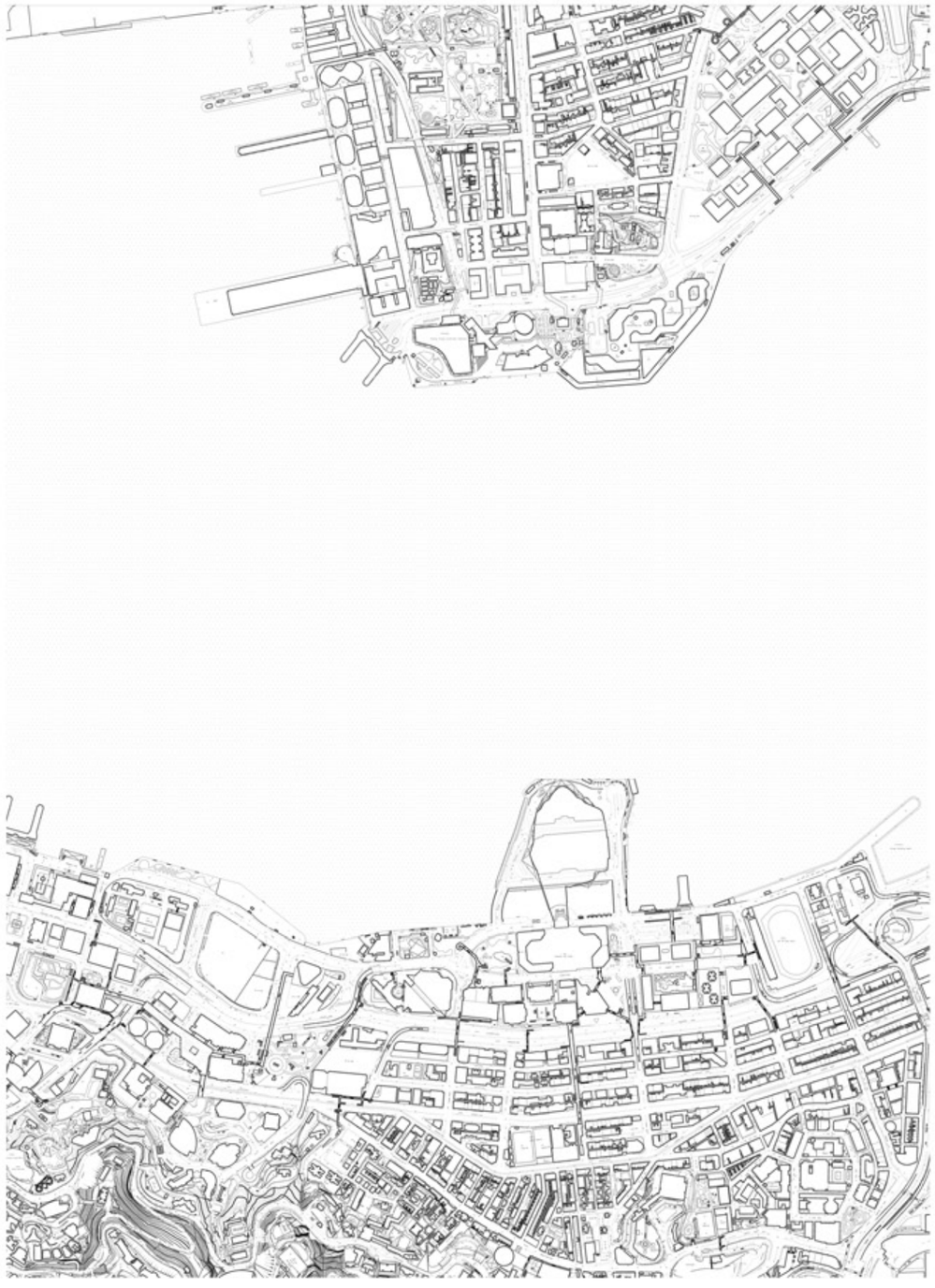
PEDESTRIANIZATION

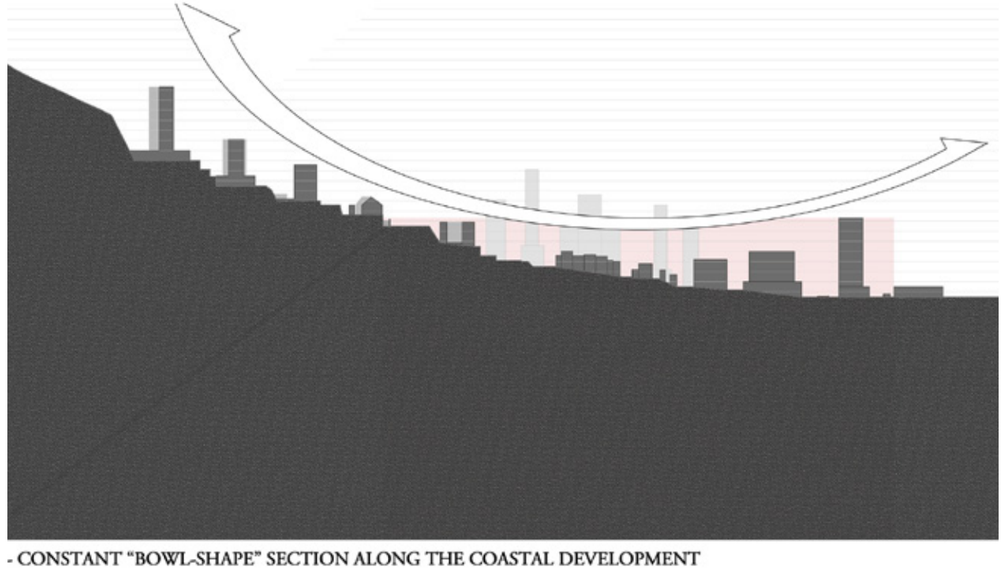


SKYBRIDGE SYSTEM

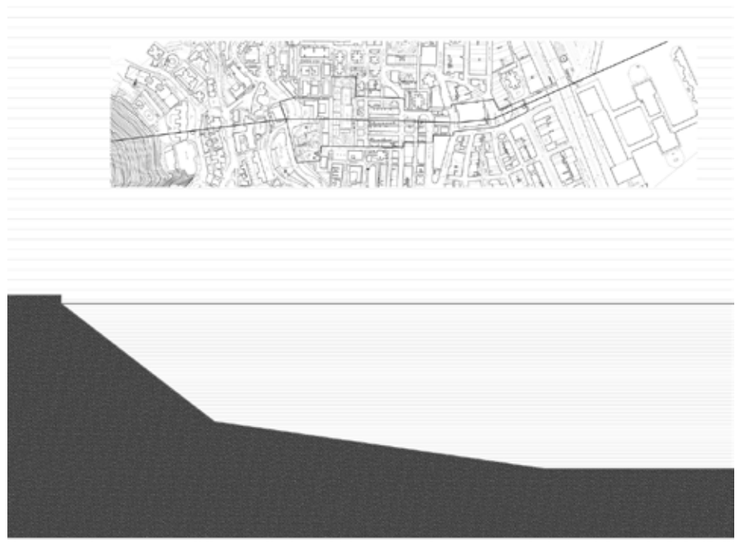
ANALYSIS

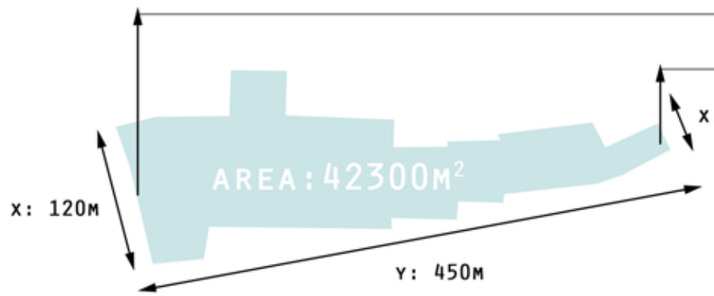






- CONSTANT "BOWL-SHAPE" SECTION ALONG THE COASTAL DEVELOPMENT





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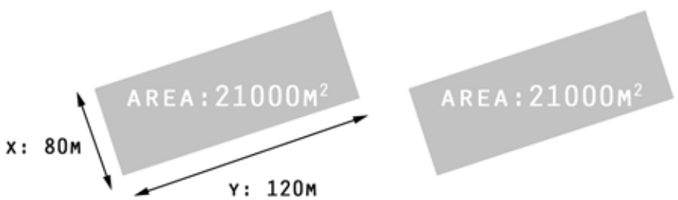
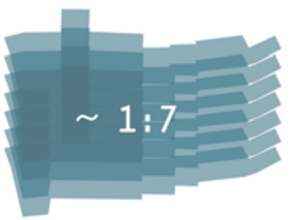


2 x MANHATTAN TYPICAL CITY BLOCK

PARK
MIDDLE SCHOOL
PLAYGROUND
SPORT FIELDS
PUBLIC PLAZA
CIVIC CENTER
RESIDENTIALS
COMMERCIALS

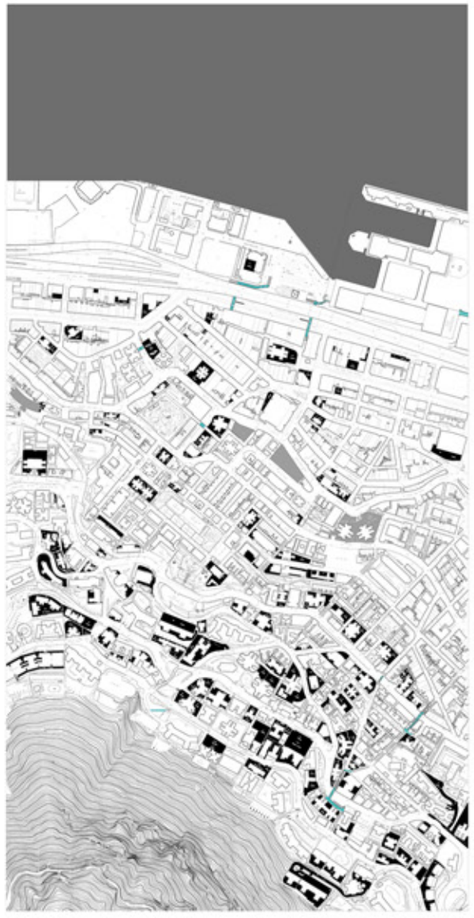


EXISTING PLOT RATIO

ALMOST THE LOWEST PLOT RATIO AMONG THE DISTRICT !

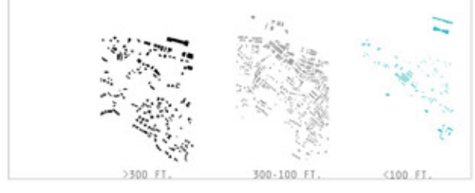
EXISITING SITE PROGRAMS	Existing Area (sq. m)
CULTURAL	
Library	1000
Theatre	480
Exhibition Hall	360
Rehearsal Hall	3224
Dance Practice Room	70
Lecture Hall	150
Art Studios	60
Music Practice Rooms	30
Ticketing Box Office	10
Middle School	5600
Park	3310
TOTAL	**14294**
SPORTS	
Gym (1)	70
Basketball Court (2 indoor)	1000
Basketball Court (3 outdoor)	1100
Volleyball Court (2)	1000
Football Field (2)	2000
Tennis Court (1)	310
playground (2)	850
TOTAL	**6330**
COMMERCIAL	
Food Court	1500
Food Market	2000
Shops	8800
Offices	19800
Young Hostel	4500
TOTAL	**36600**
RESIDENTIAL	
Apartment	37900
TOTAL	**37900**
TOTAL NO. HOUSEHOLDS	**760**
TOTAL NO. RESIDENTS	**2300**
SERVING CITIZENS	120000
SHARED PROGRAMS AREA (**CULTURAL** + **SPORTS** + **COMMERCIAL**)	32924
TOTAL RESIDENTS/ SERVING CITIZENS	1:52
SHARED PROGRAMS AREA/SERVING CITIZENS	**3.6 person : 1 sq. m**

EXISTING PROGRAM DIVERSITIES



MULTI-GROUND CONDITION

BUILDING HEIGHT



LAND VALUE

ROAD TYPOLOGIES

PROGRAMS DISTRIBUTION

- LINEAR CONNECTION
- UNREGULATED SPEED
- CLOSE RELEVANCY TO THE GROUND

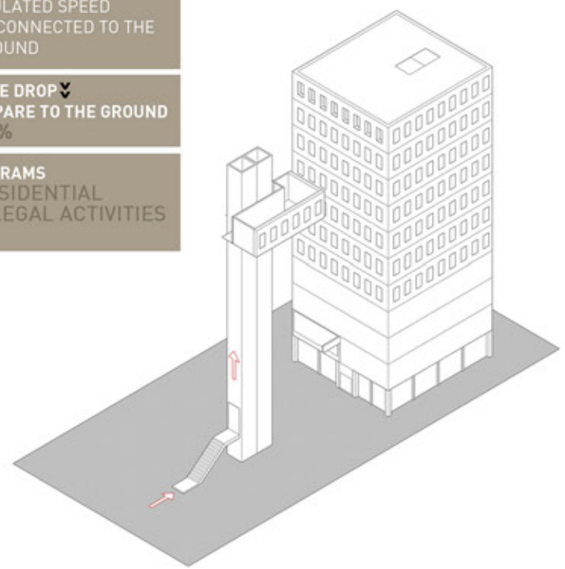
VALUE DROP ⌄⌄
COMPARE TO THE GROUND
- 40-50%

PROGRAMS
- BOOKSTORES
- CAFE

- POINT CONNECTION
- REULATED SPEED
- DISCONNECTED TO THE GROUND

VALUE DROP ⌄⌄
COMPARE TO THE GROUND
- 90%

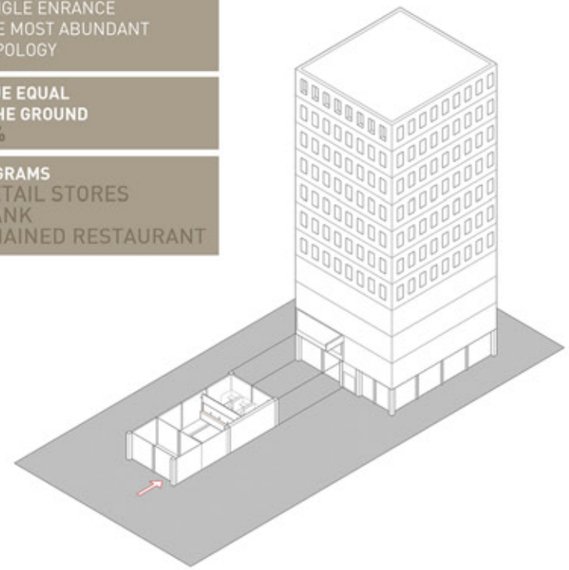
PROGRAMS
- RESIDENTIAL
- ILLEGAL ACTIVITIES



- PLANE CONNECTION
- SINGLE ENRANCE
- THE MOST ABUNDANT TYPOLOGY

VALUE EQUAL
TO THE GROUND
+ 0%

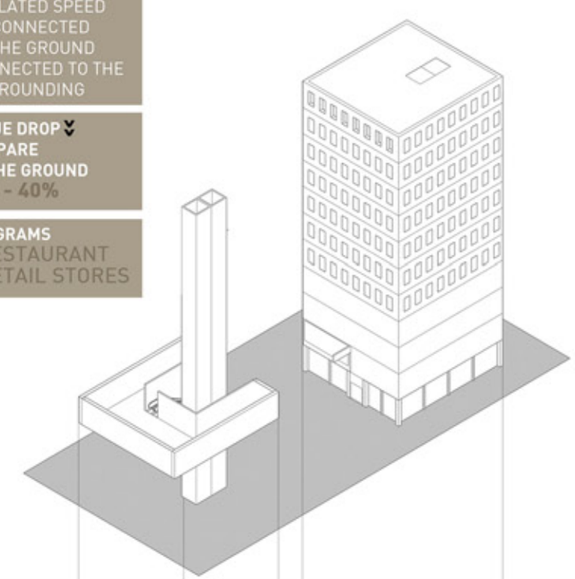
PROGRAMS
- RETAIL STORES
- BANK
- CHAINED RESTAURANT

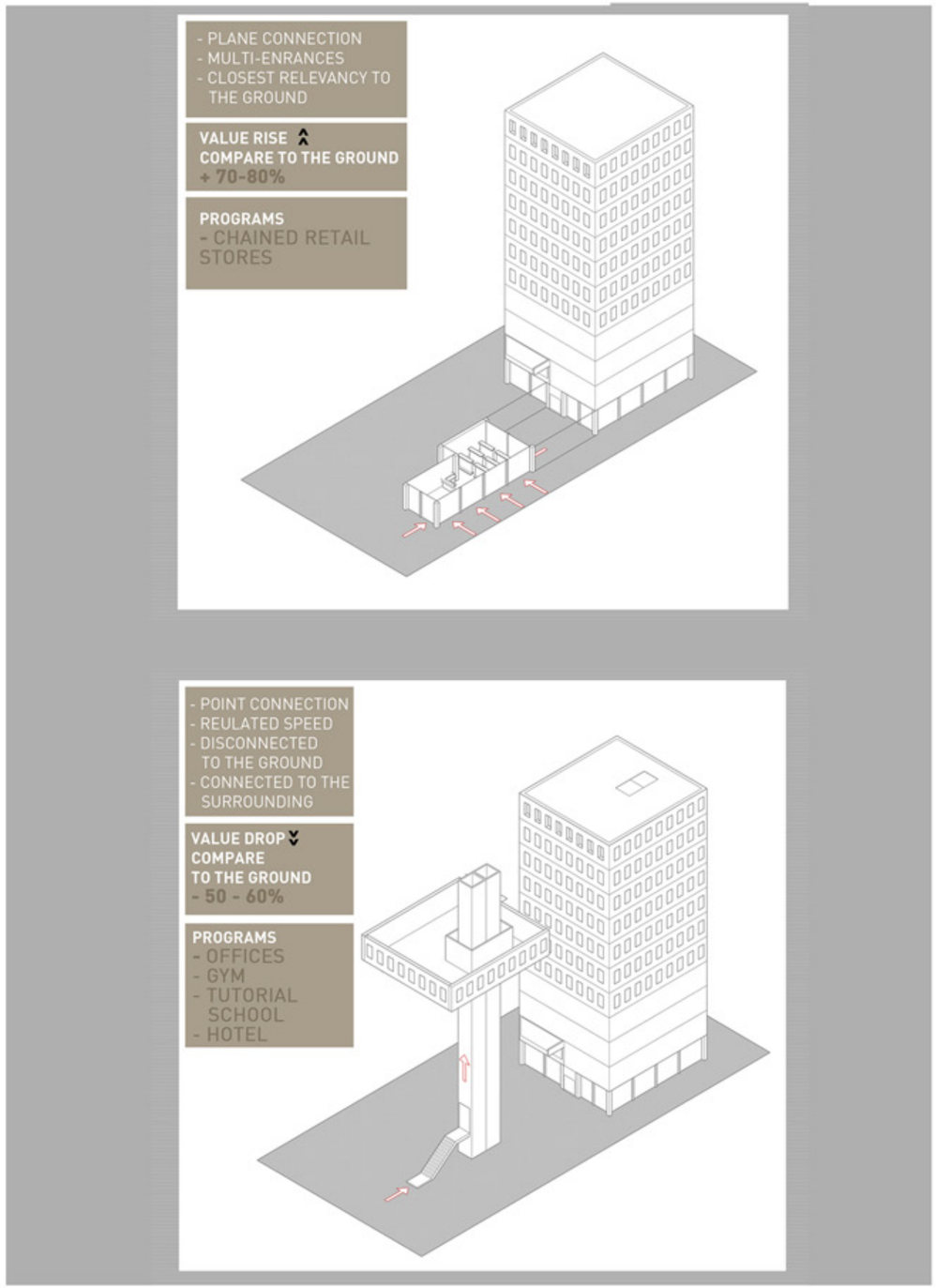


- LINEAR CONNECTION
- REULATED SPEED
- DISCONNECTED TO THE GROUND
- CONNECTED TO THE SURROUNDING

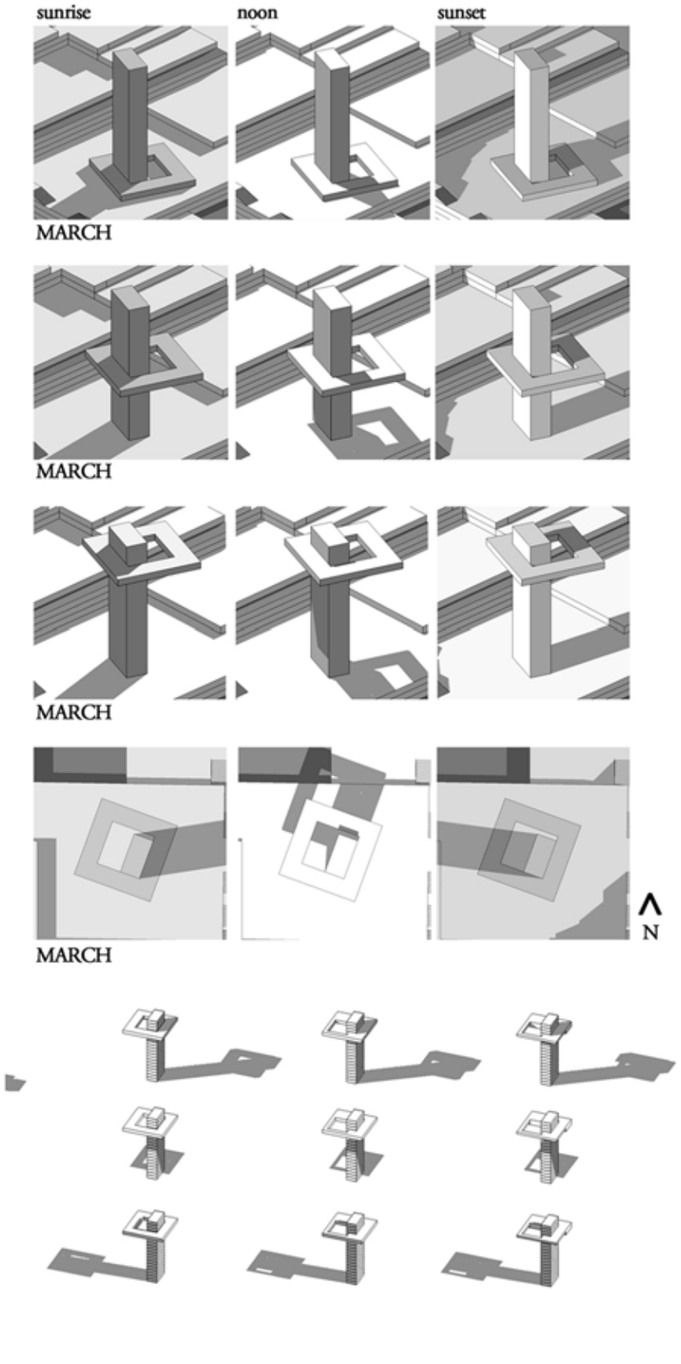
VALUE DROP ⌄⌄
COMPARE
TO THE GROUND
- 30 - 40%

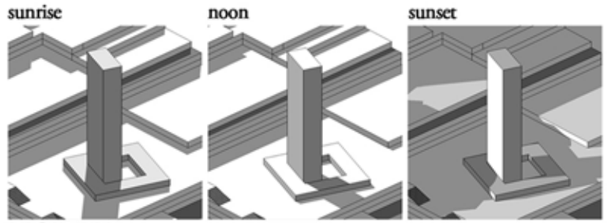
PROGRAMS
- RESTAURANT
- RETAIL STORES



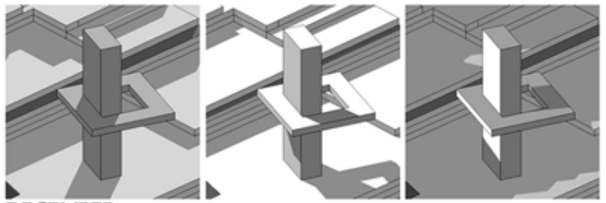


SOLAR ANALYSIS





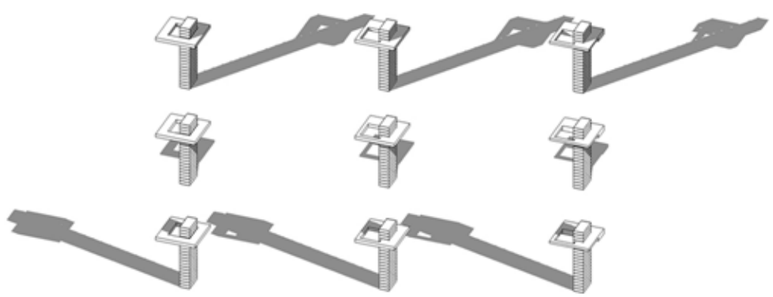
DECEMBER

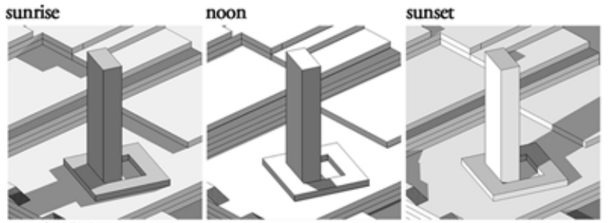


DECEMBER

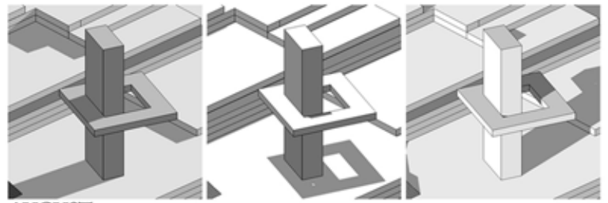
DECEMBER

DECEMBER





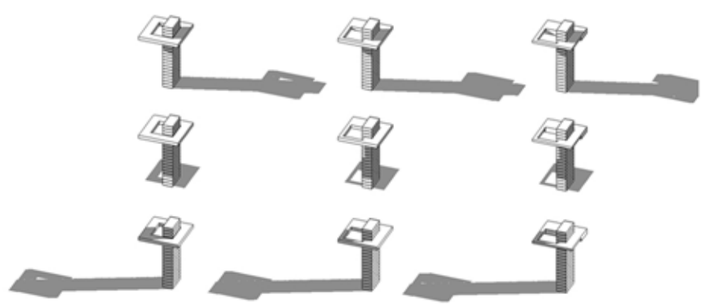
AUGUST



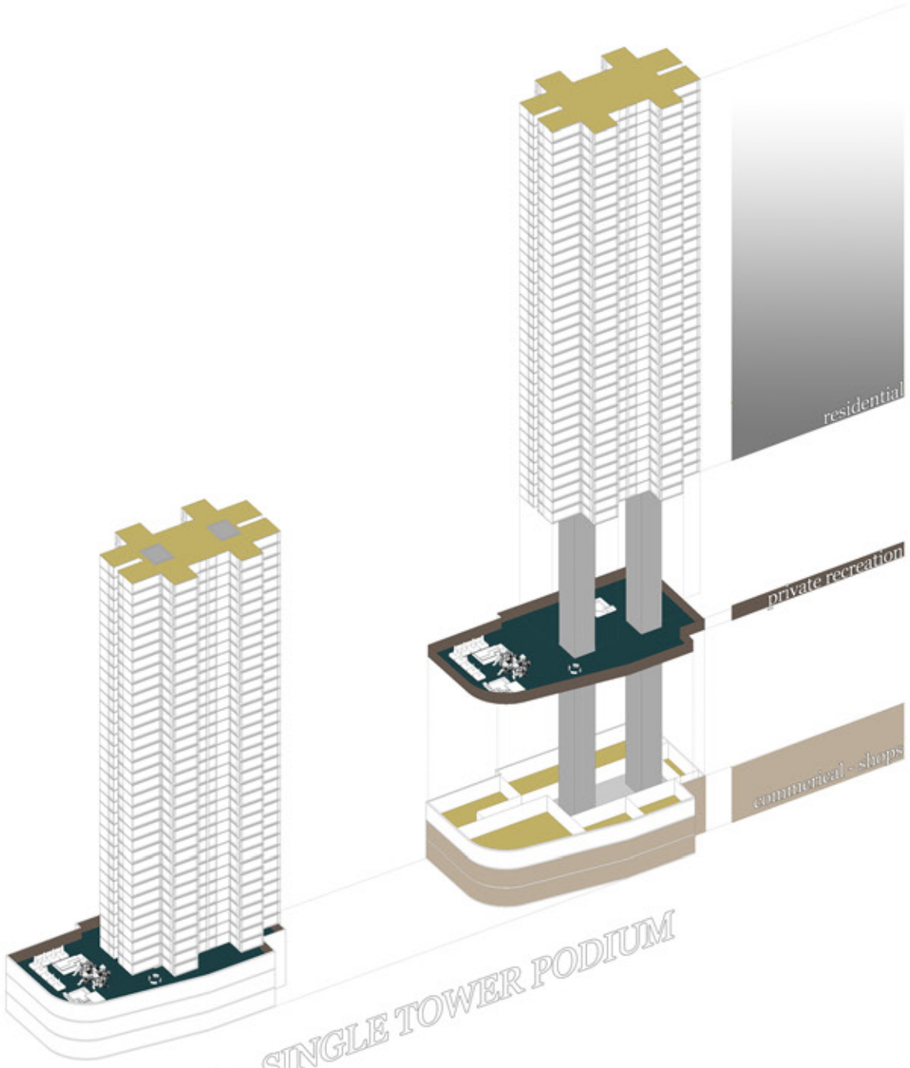
AUGUST

AUGUST

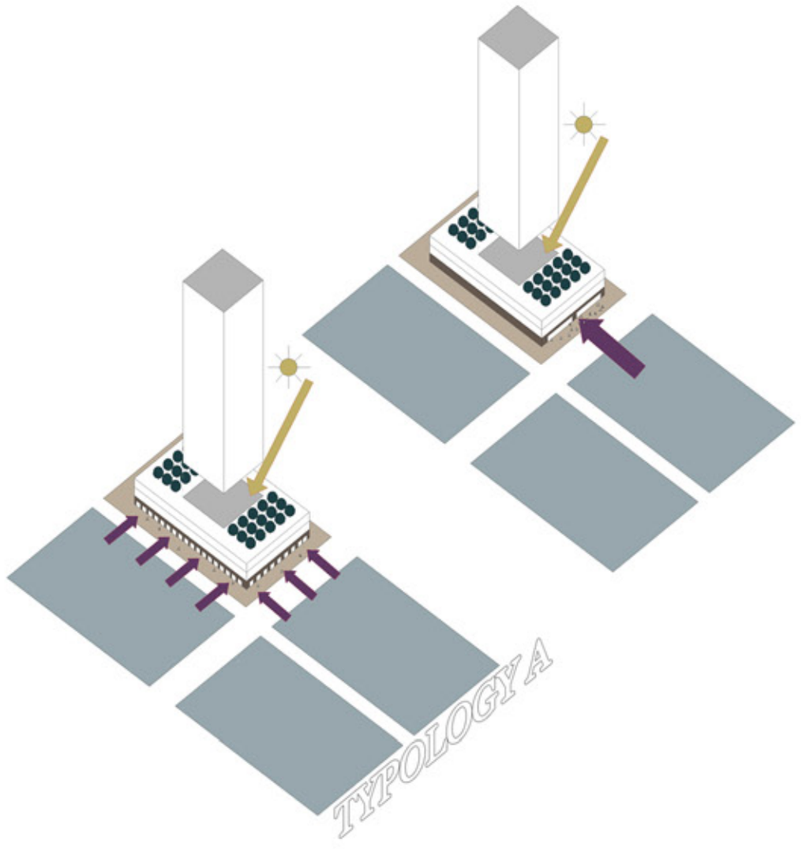
AUGUST



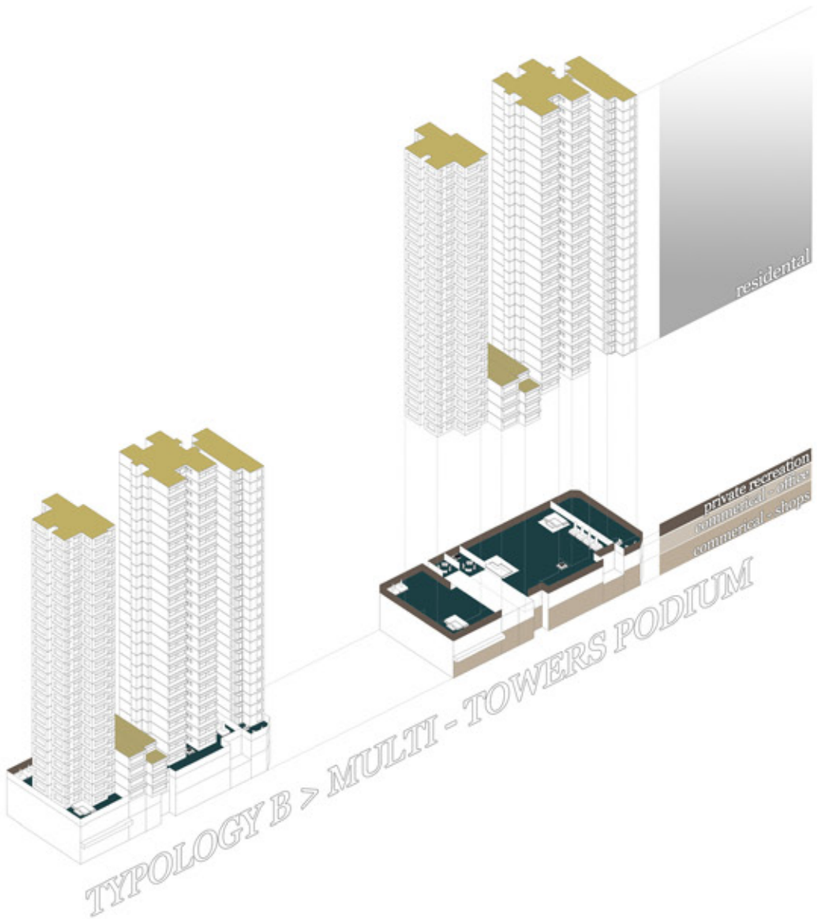
BUILDING TYPOLOGIES

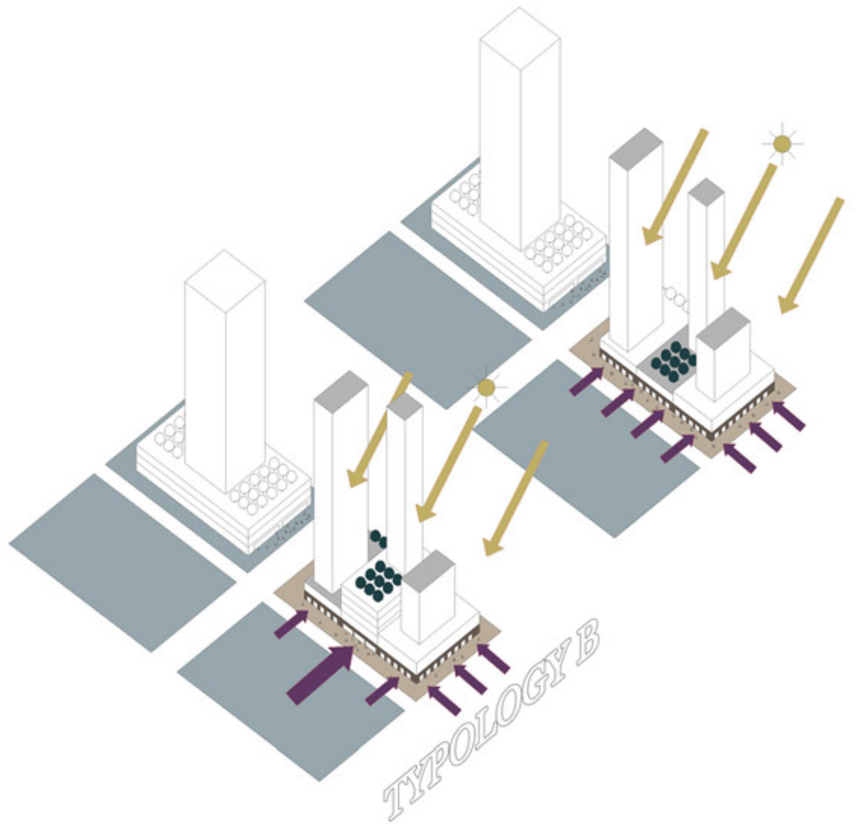


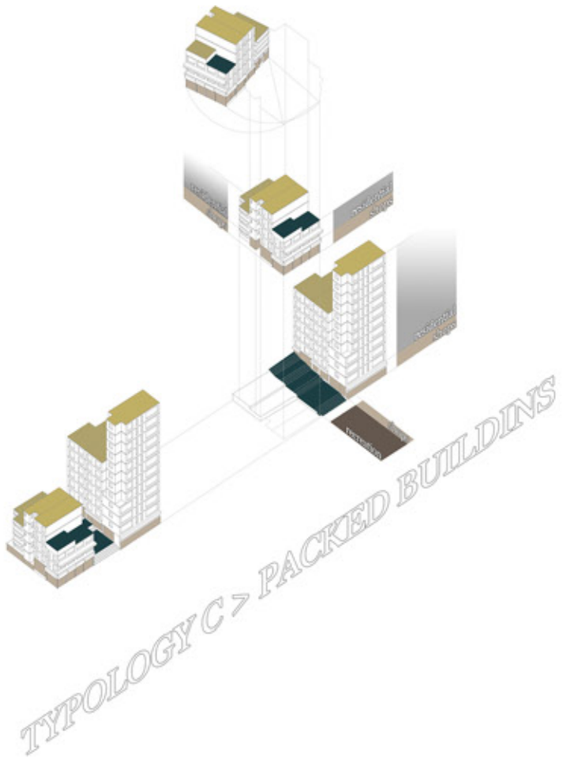
TYPOLOGY A > SINGLE TOWER PODIUM



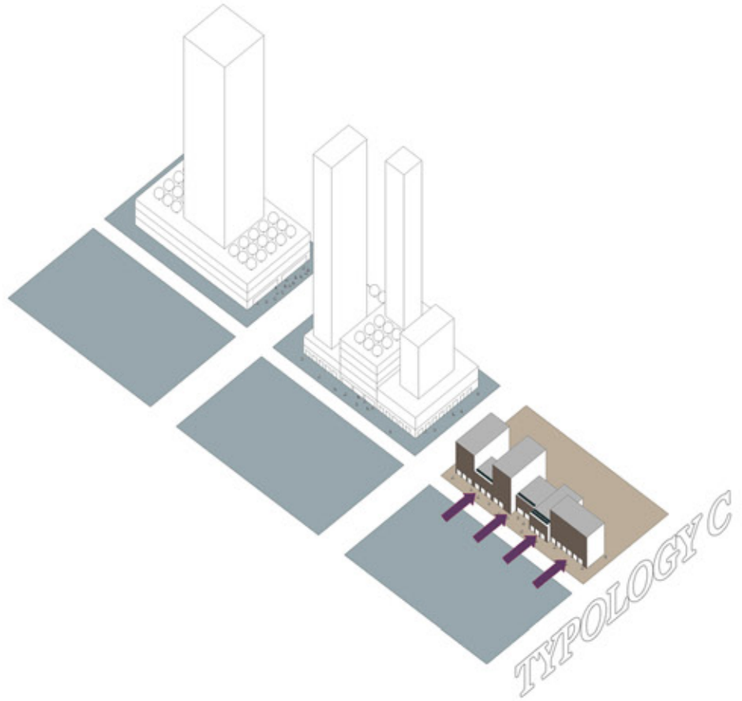
TYPOLOGY A


residental
private recreation
commercial - offices
commercial - shops
TYPOLOGY B > MULTI - TOWERS PODIUM


TYPOLOGY B

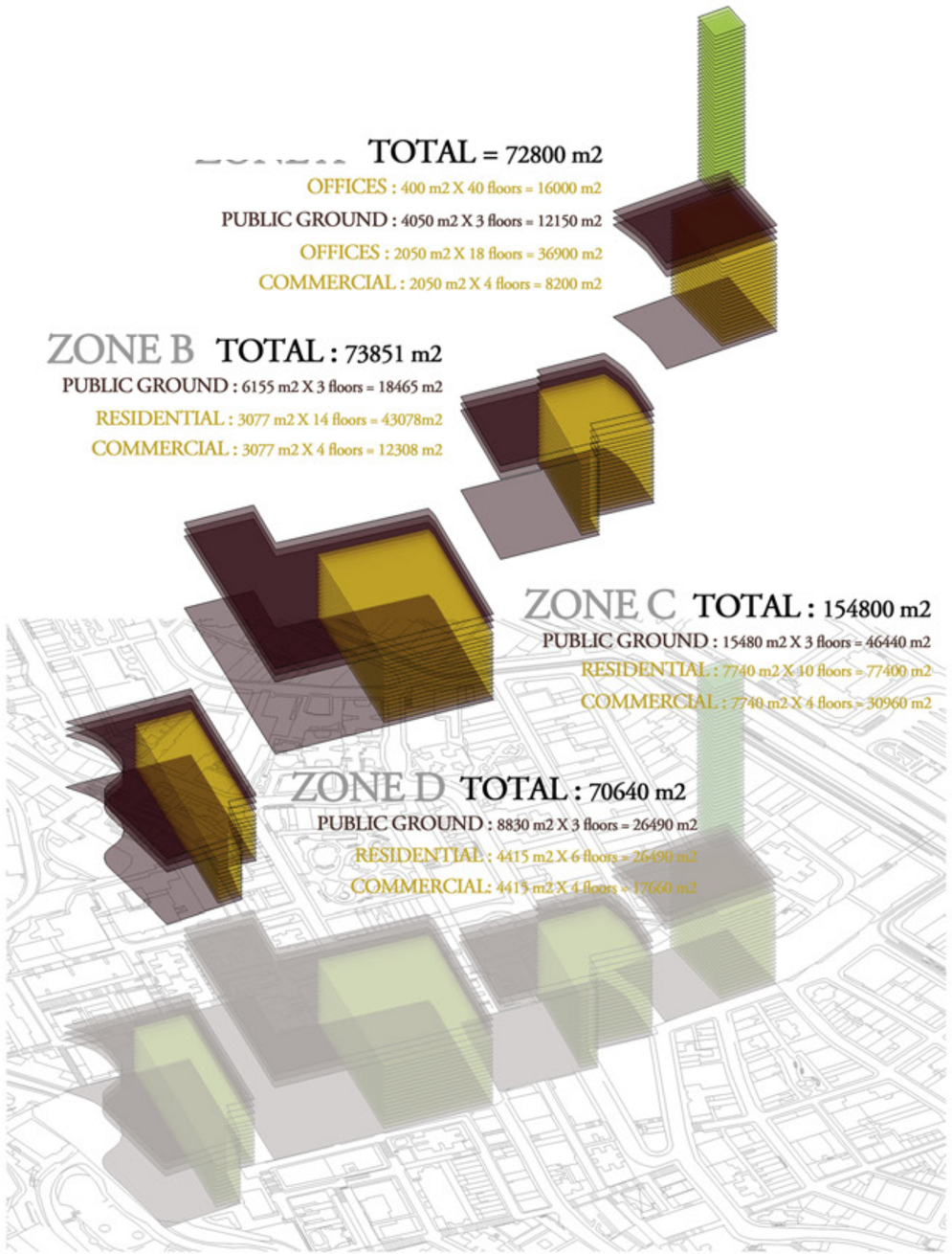


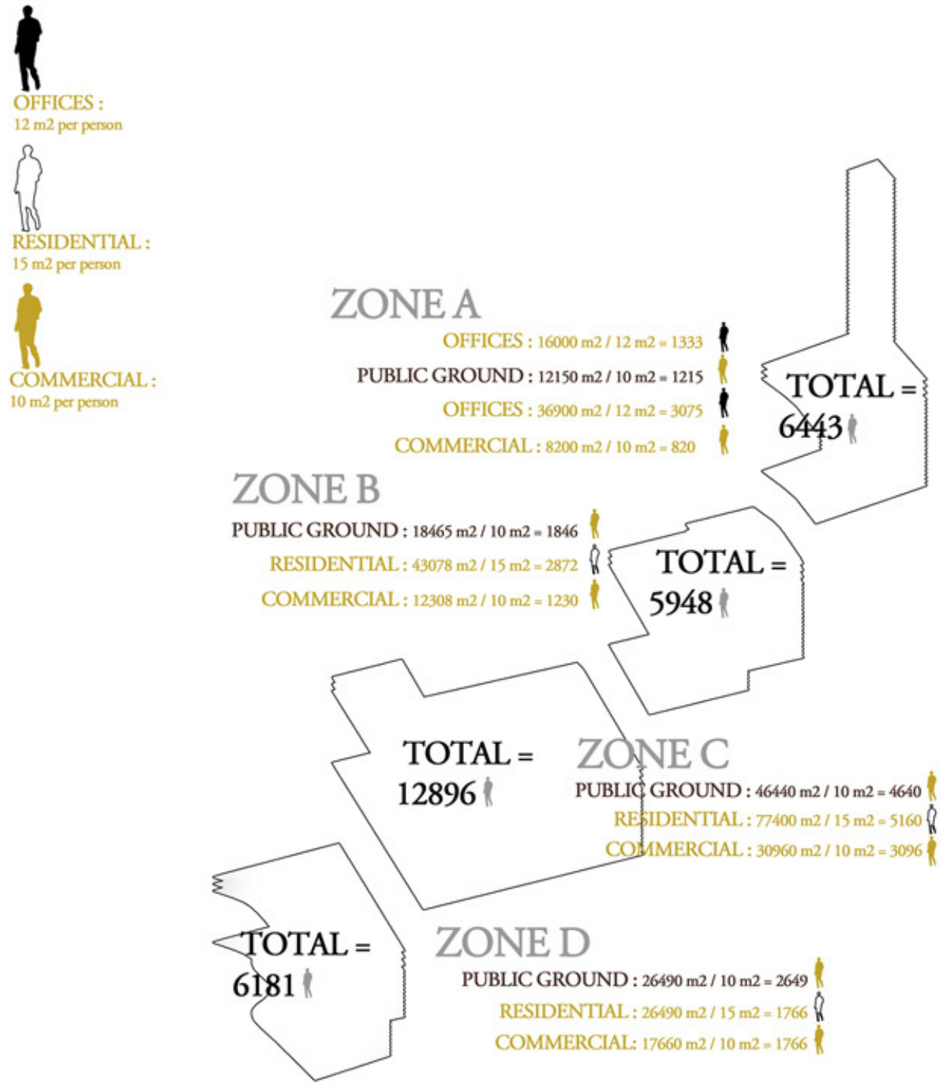
TYPOLOGY C > PACKED BUILDINS



TYPOLOGY C

BUILDING AREA





TOTAL FLOOR AREA = 372091 m2
PLOT RATIO = 372091 m2 / 42300 m2 = 1 : 8.8
POPULATION = 31468

BUILT AREA & POPULATION ESTIMATION

Round Trip Time (RTT) by up peak model

RTT = 2Ht + S +1 t + 2

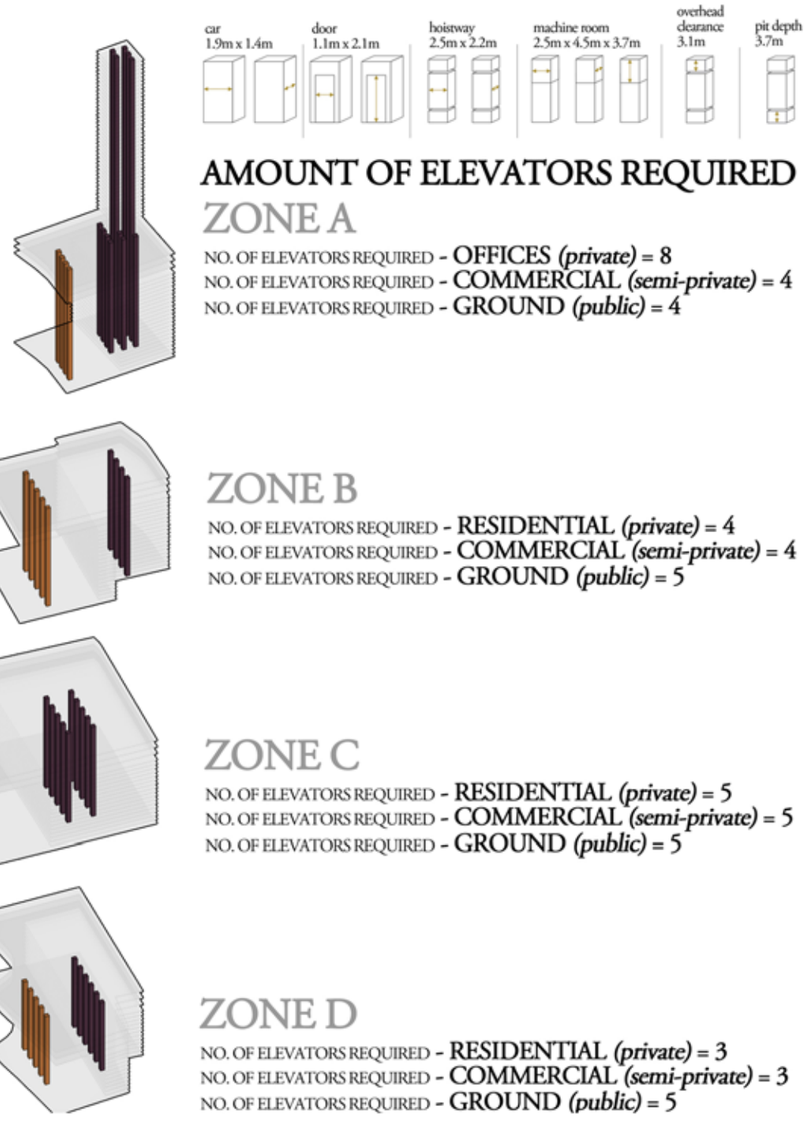
Where
RTT = round trip time in seconds
H=highest call reversal floor
S=average no. of stops
tv=time to transit 2 adjacent floors at rated speed in seconds
ts=time consumed when making a stop in seconds
tp=passenger transfer time for entering or exiting the lift car in seconds
P=0.8xlift car capacity in person

Waiting time < 5 mins

Each car can accommodate 15 people

Types of elevator

- passenger
- observation
- goods
- fireman
- express



AMOUNT OF ELEVATORS REQUIRED

ZONE A

NO. OF ELEVATORS REQUIRED - OFFICES *(private)* = 8
NO. OF ELEVATORS REQUIRED - COMMERCIAL *(semi-private)* = 4
NO. OF ELEVATORS REQUIRED - GROUND *(public)* = 4

ZONE B

NO. OF ELEVATORS REQUIRED - RESIDENTIAL *(private)* = 4
NO. OF ELEVATORS REQUIRED - COMMERCIAL *(semi-private)* = 4
NO. OF ELEVATORS REQUIRED - GROUND *(public)* = 5

ZONE C

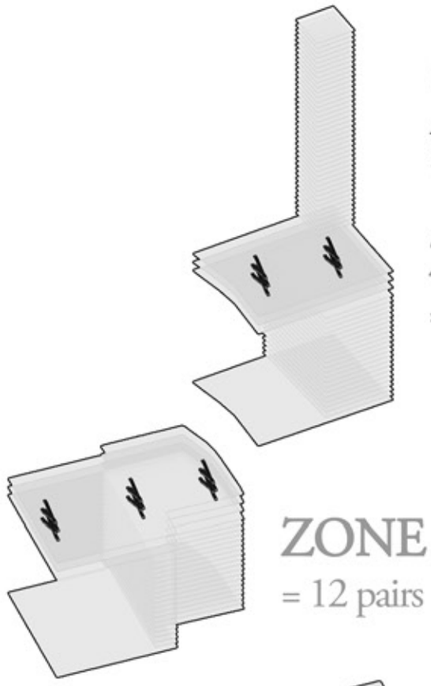
NO. OF ELEVATORS REQUIRED - RESIDENTIAL *(private)* = 5
NO. OF ELEVATORS REQUIRED - COMMERCIAL *(semi-private)* = 5
NO. OF ELEVATORS REQUIRED - GROUND *(public)* = 5

ZONE D

NO. OF ELEVATORS REQUIRED - RESIDENTIAL *(private)* = 3
NO. OF ELEVATORS REQUIRED - COMMERCIAL *(semi-private)* = 3
NO. OF ELEVATORS REQUIRED - GROUND *(public)* = 5

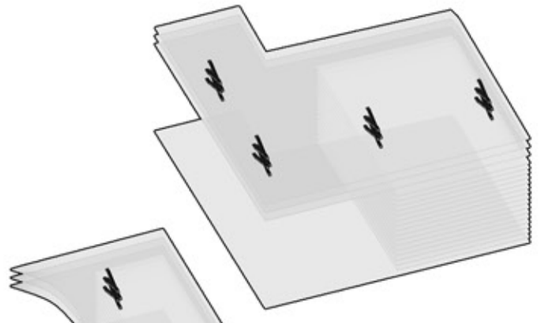
30° INCLINATION

AMOUNT OF
ESCALATORS REQUIRED

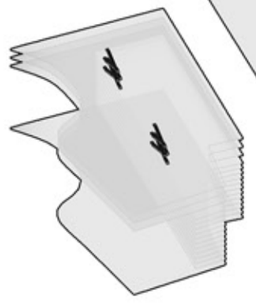


ZONE A
= 8 pairs

ZONE B
= 12 pairs

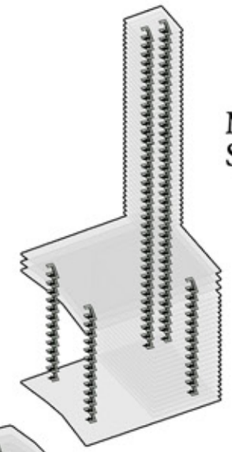


ZONE C
= 16 pairs

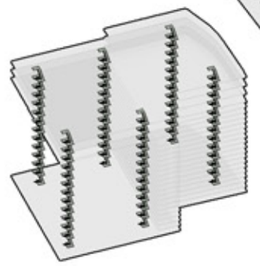


ZONE D
= 8 pairs

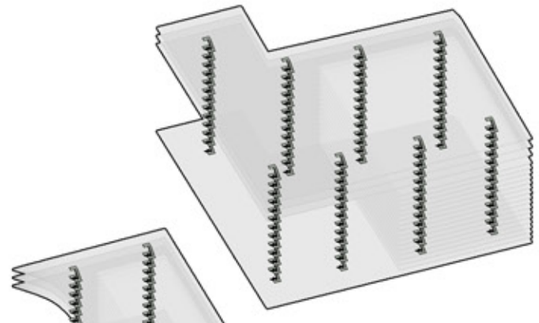
MINIMUM NO. OF
STAIRWELL REQUIRED



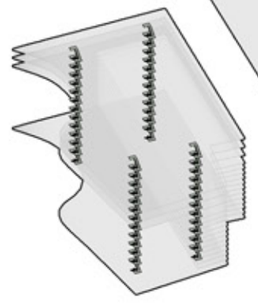
ZONE A
= 5 stairwells



ZONE B
= 6 stairwells



ZONE C
= 8 stairwells



ZONE D
= 8 pairs

DESIGN

DESIGN EXPERIMENTS

The thesis proceeded through various design experiments testing various circulation strategies, relationships with natural ground, program organizations and private/semi-private/public zoning.

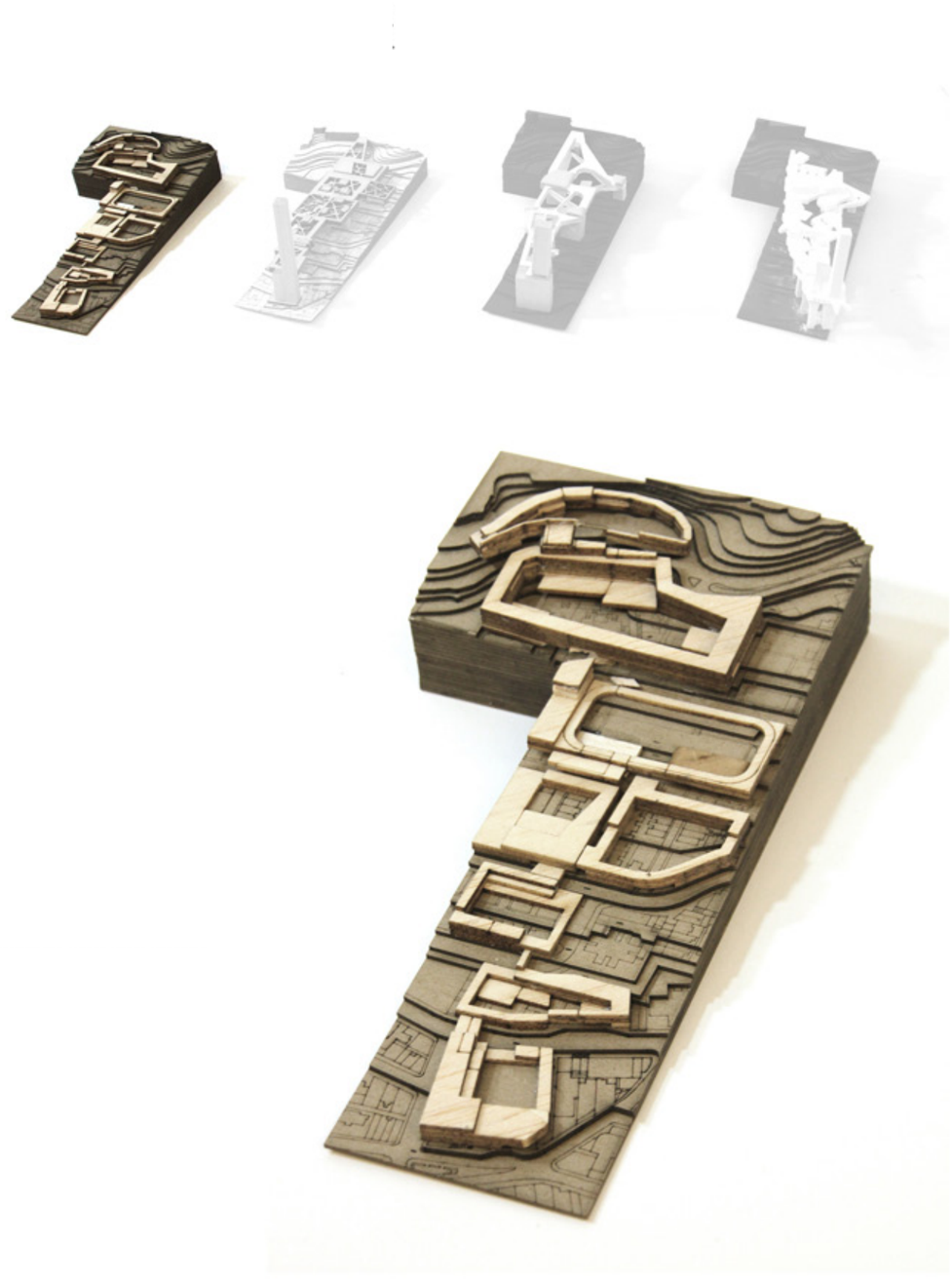
The thesis is an ongoing project investigating the design developments and potentials of the three dimensional urbanism instead of suggesting the best solution for the project.

SCHEME 1.0

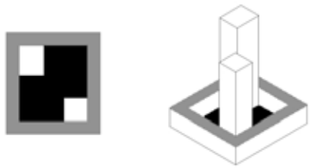
SCHEME 1.0 - RING

This proposal intended to establish a continuous and diffused relationship to the natural ground. Since the project is situated on a sloped site, the RING is elevated on one side to provide pedestrian access while continued with the other to allow vehicle access. Creating no significant urban forms, the RING serves as the public and semi-public space at the same time groups the buildings into several clusters. The loop also defines a public courtyard for each cluster which enhance the formation of community while duplicates the total surface area and entrances for commercial activities.

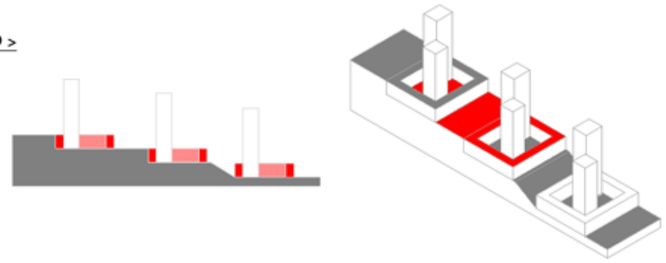
This proposal suggested almost chaotic circulation strategy indifferent to the existing condition. The RINGS similar in size, form and hierarchy confuse the identity of the whole development and diminish the significance of its urbanistic role - as an demonstration of new urban form which is applicable along the coastal line.



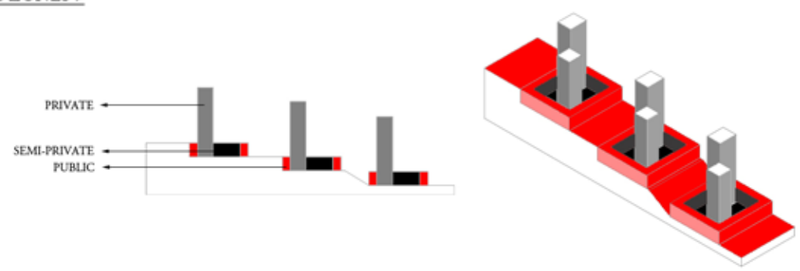
DESIGN
SCHEME 1.0 RING



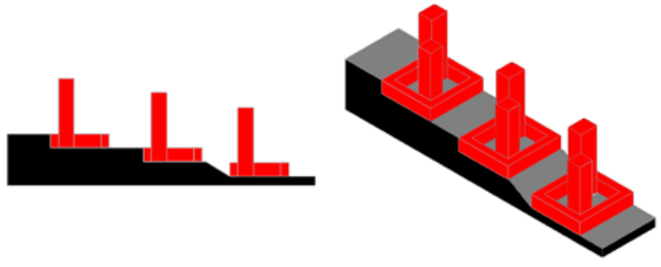
RELATIONSHIP WITH
THE EXISTING GROUND >



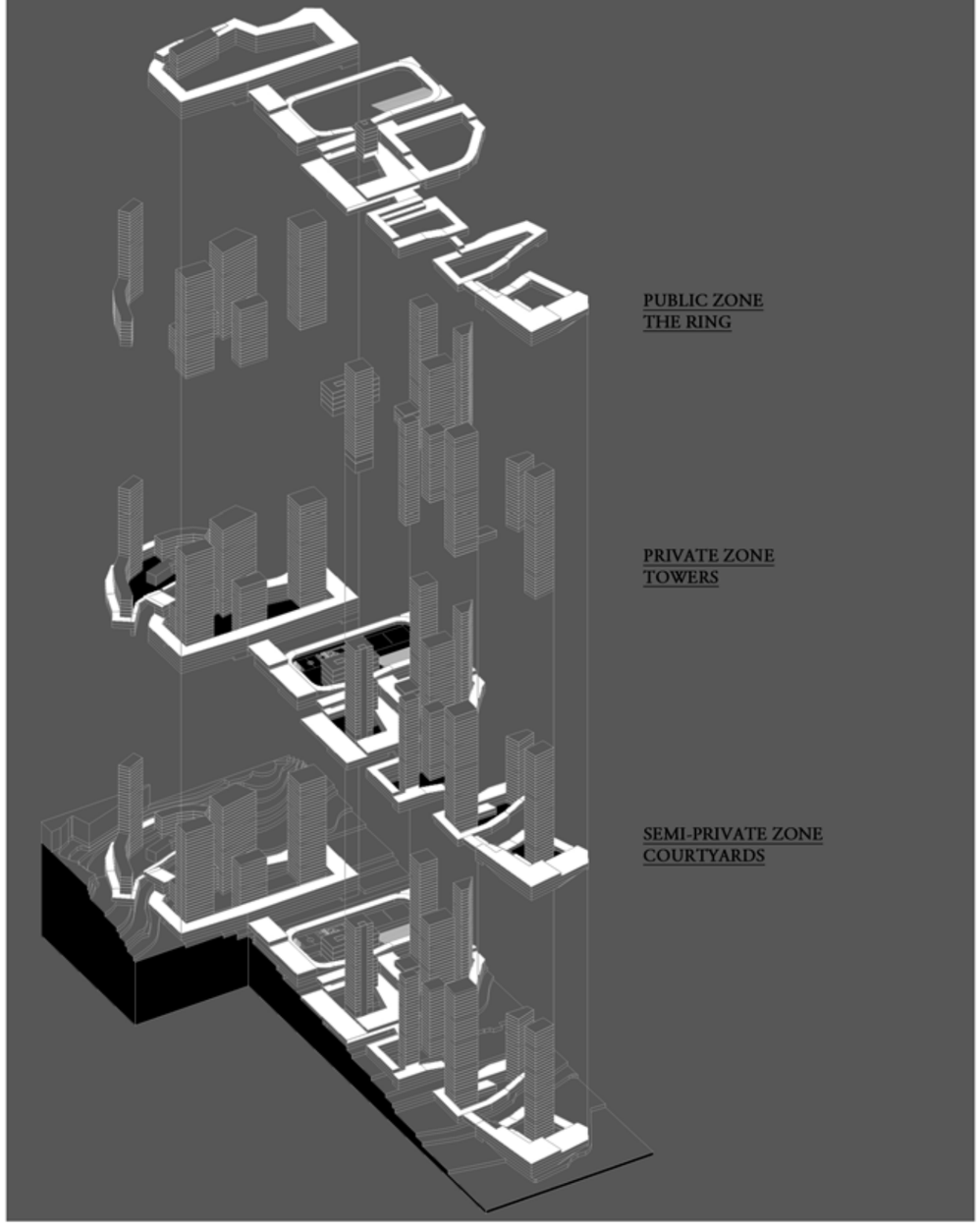
PRIVATE vs SEMI-PRIVATE
vs PUBLIC ZONES >



URBAN FORM >

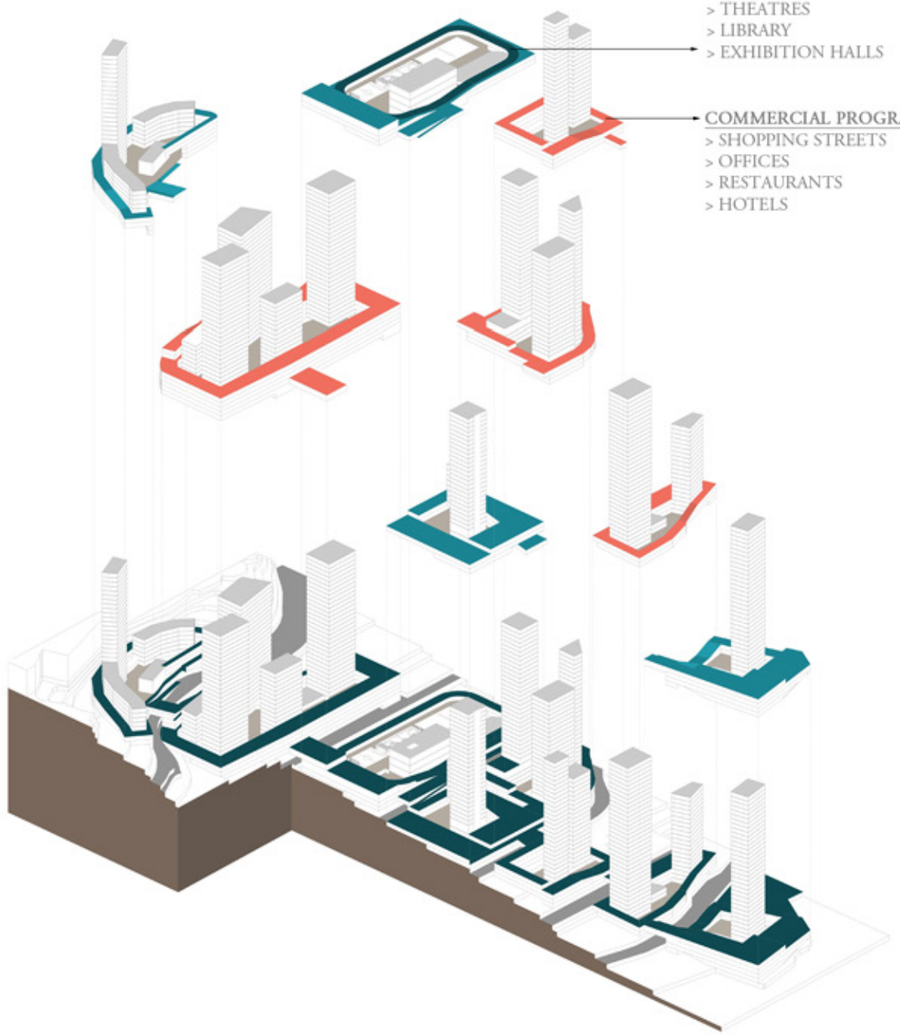


DESIGN
SCHEME 1.0 RING > PROGRAMMATIC LAYERINGS

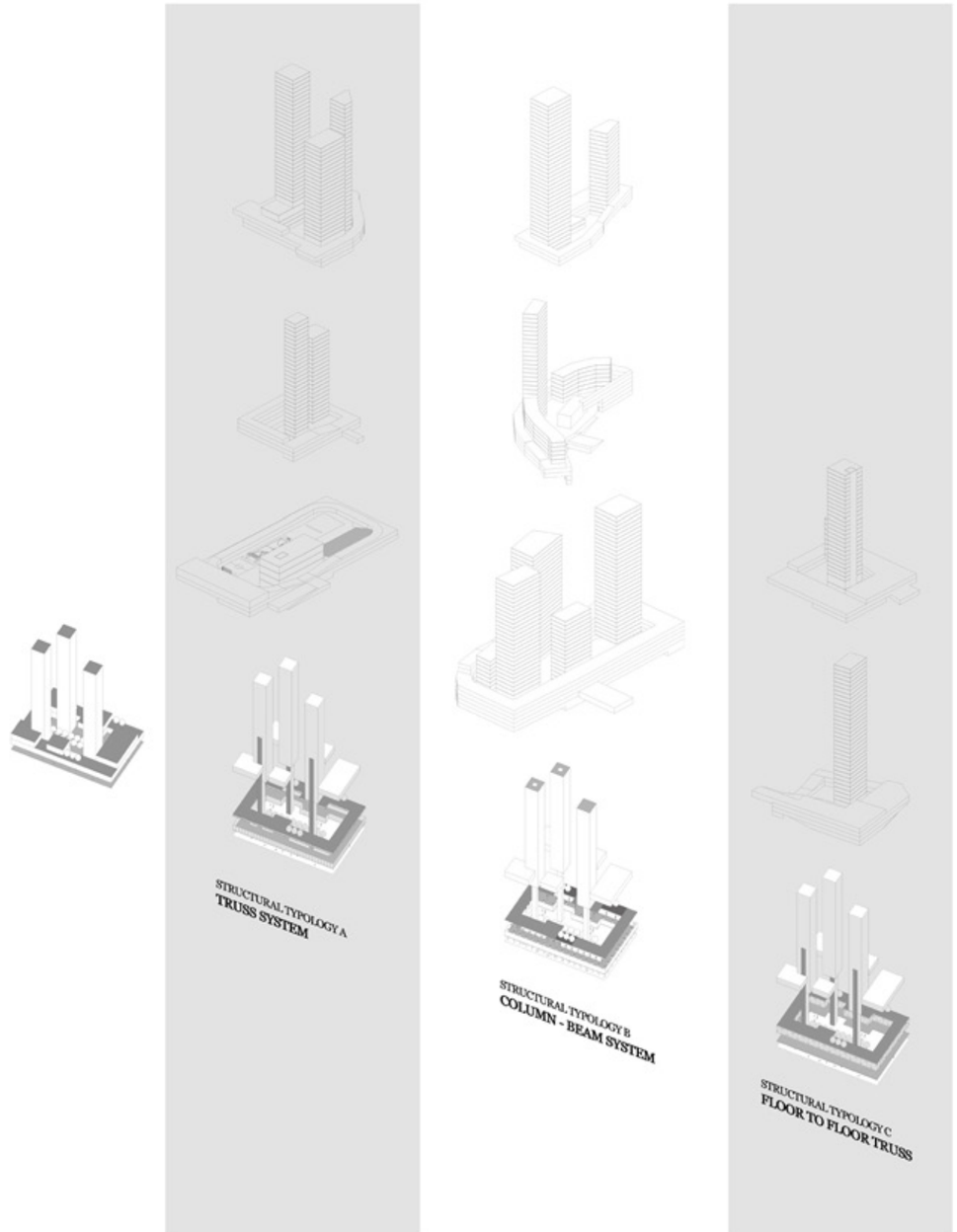


DESIGN
SCHEME 1.0 RING > PROGRAMMATIC CLUSTERS

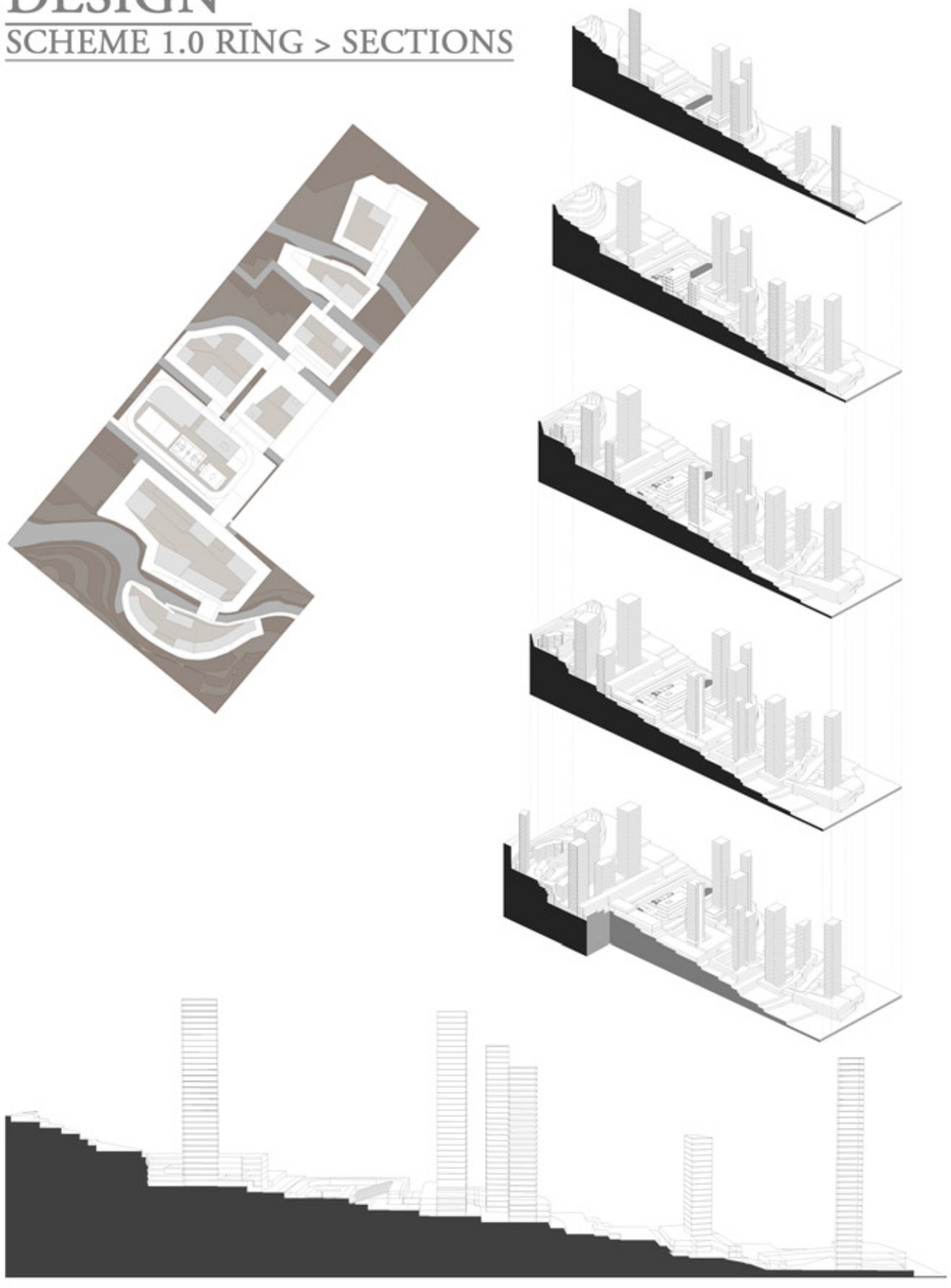
Within the public zone, there are two main types of program which are civic programs and commercial programs. In Hong Kong, commercial spaces are considered to be on of the main public spaces since those typical public spaces are not affordable in such a high-density situation. The proposal adopted this phenomenon at the same time capitalized the high pedestrian flow of the commercial program to activate the civic program and furthermore the new ground.



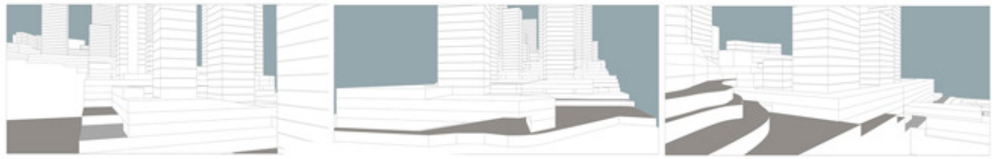
DESIGN
SCHEME 1.0 RING > STRUCTURAL STRATEGIES

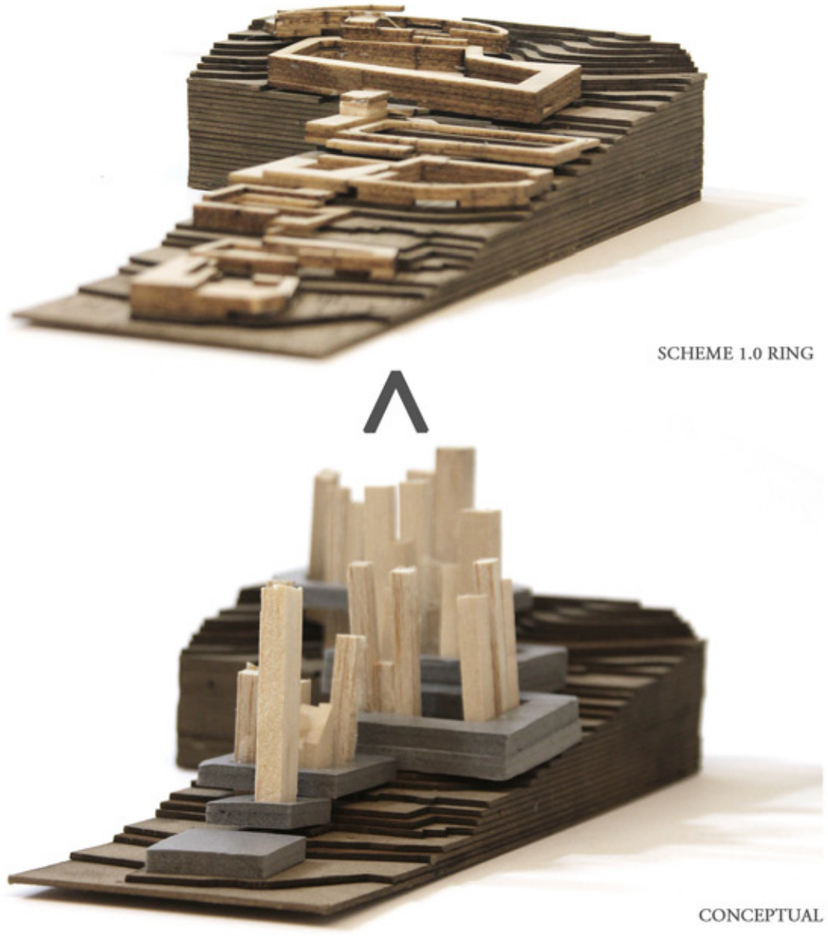


DESIGN
SCHEME 1.0 RING > SECTIONS



DESIGN
SCHEME 1.0 RING > PERSPECTIVES





SCHEME 1.0 RING

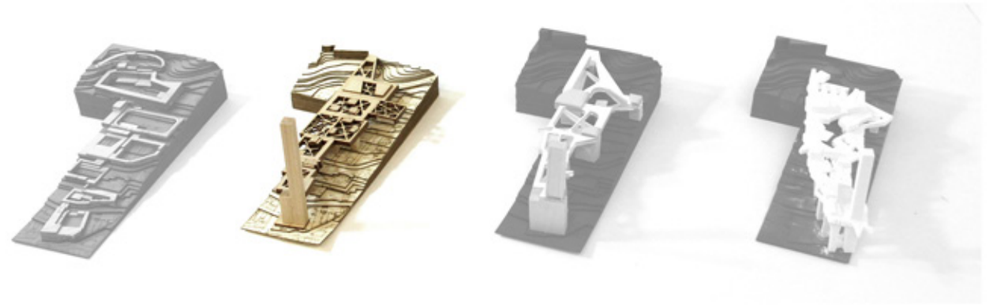
CONCEPTUAL

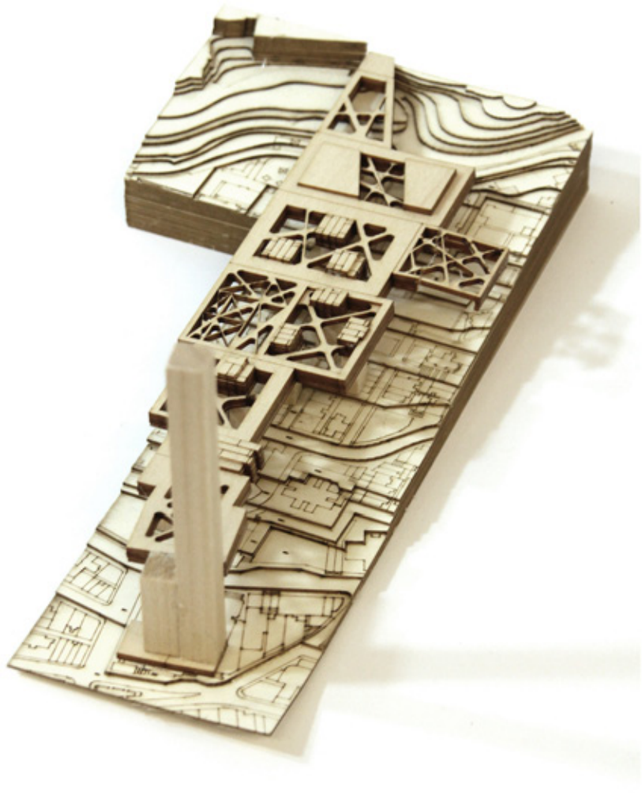
SCHEME 2.0

SCHEME 2.0 - MAT

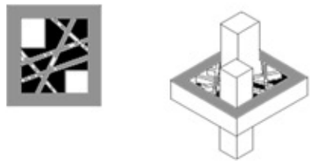
This proposal attempted to create a clear and strong urban form through the new elevated ground. Since the space between the coastal line and the hill side is always neglected resulting in the common bowl shape sections, this elevated ground provides a new possible solution to active this under-developed space. Bisecting the city vertically unlike the typical zoning plan strategy, it offers a new perspective of the cityscape and links the city much closer to its natural resources (sea and mountain).

Learning from previous scheme, the mat is formed by connecting the rings. It helps to organize the site at the same time grouping the buildings into clusters. The lattices like structure forms easier circulation paths while allows the light to penetrate through the ground. This proposal suggests a very clear circulation strategy speaking to the sloped condition. The flat platform mainly for pedestrians' circulation supported by the vertical circulation of the building cores. The vehicle circulates mainly on the existing ground which connects to the larger urban fabric. However the ring structure does not suggest a clear definition of the elevated site boundary, it similar to the RING scheme offers a typological design instead of urbanistic proposal.

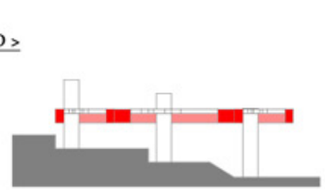


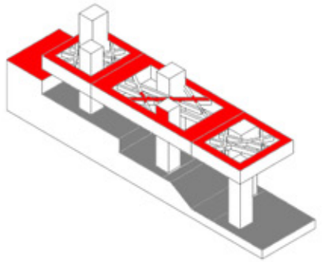


DESIGN
SCHEME 2.0 MAT

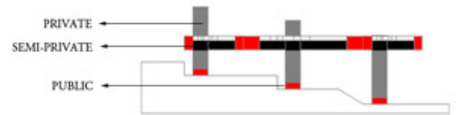


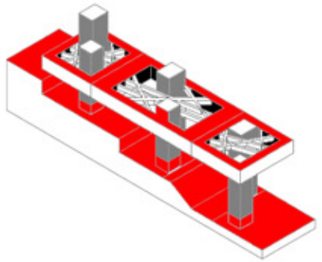
RELATIONSHIP WITH
THE EXISTING GROUND >



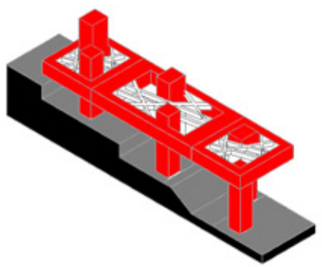


PRIVATE vs SEMI-PRIVATE
vs PUBLIC ZONES >

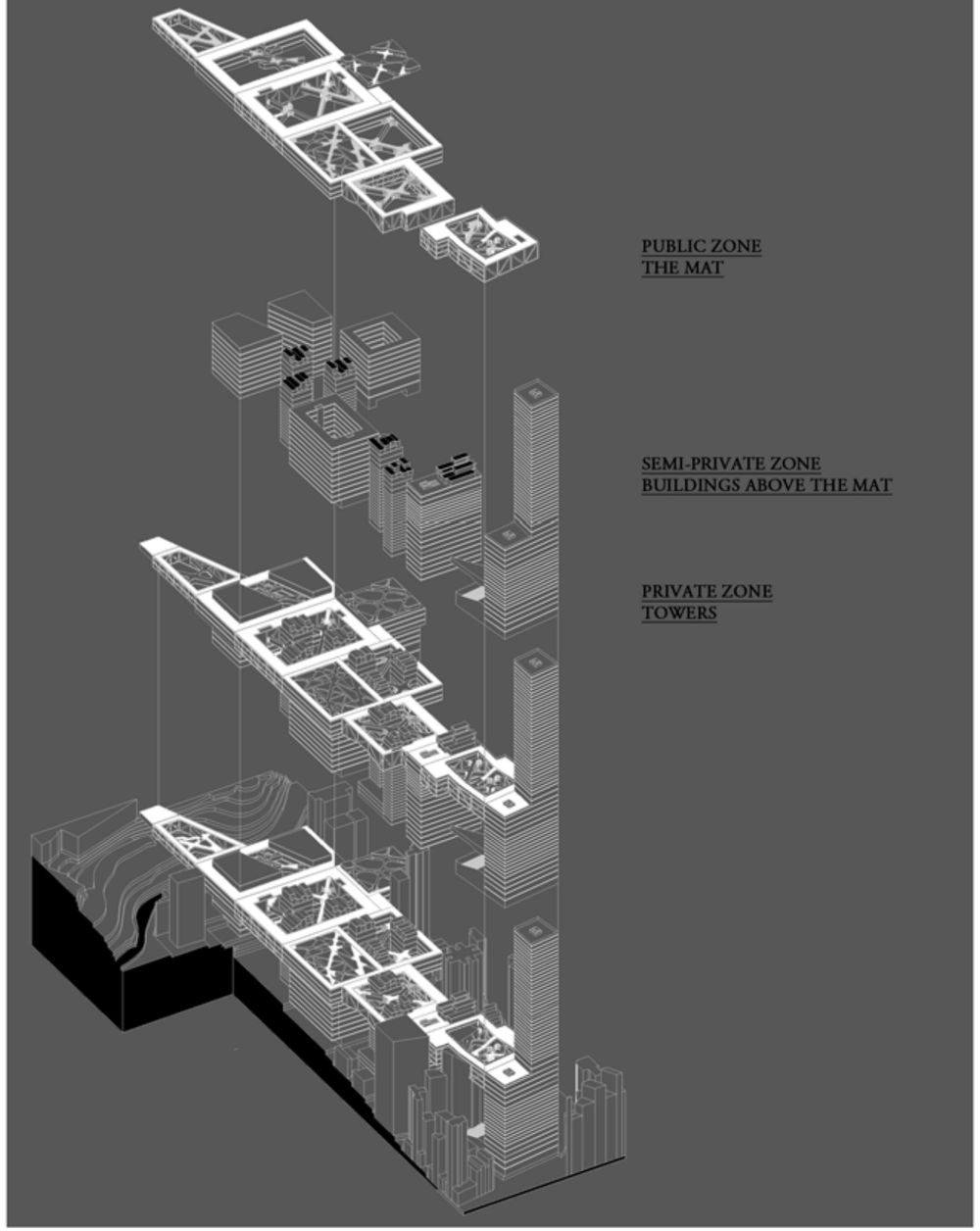




URBAN FORM >

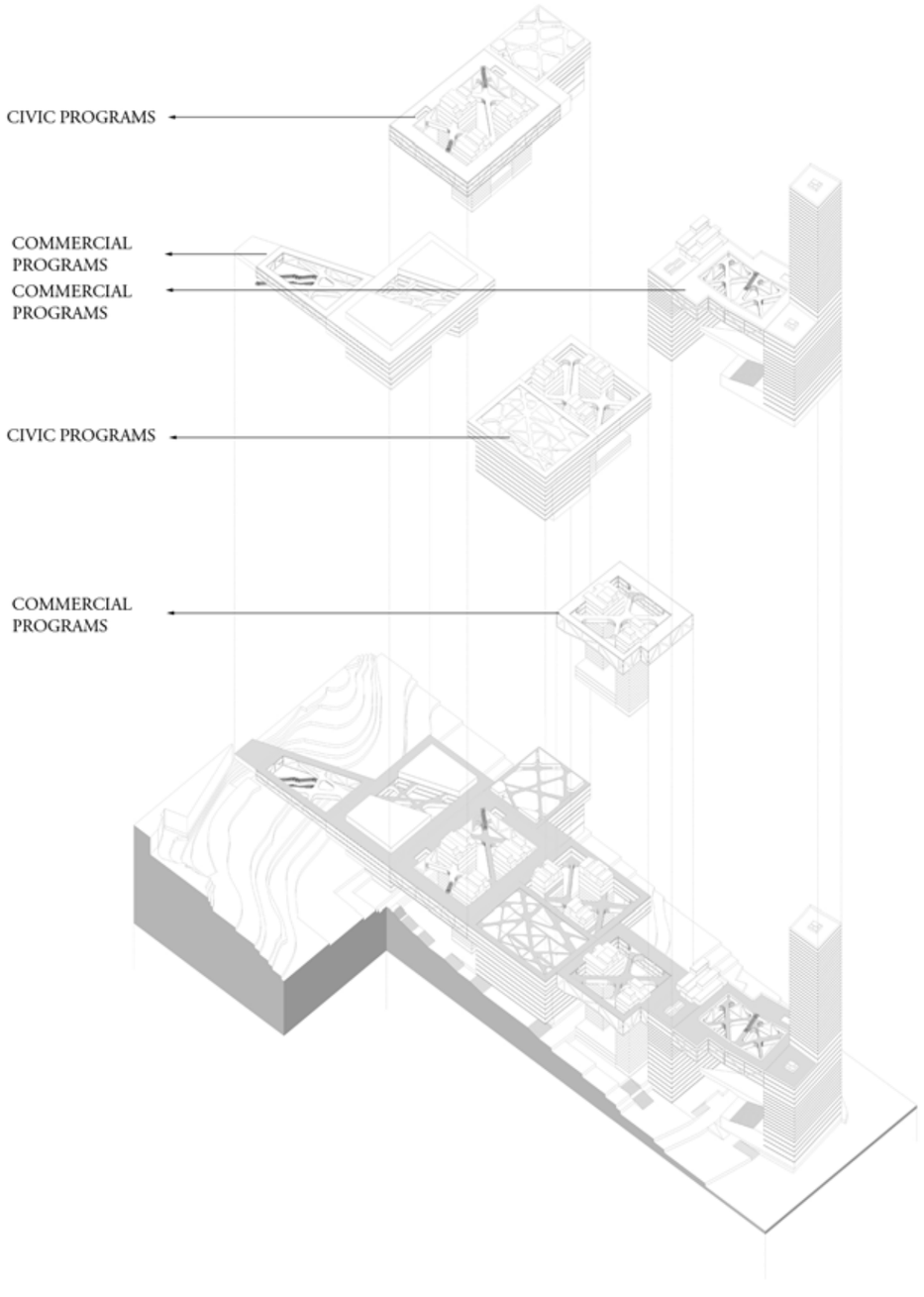


DESIGN
SCHEME 2.0 MAT > PROGRAMMATIC LAYERINGS



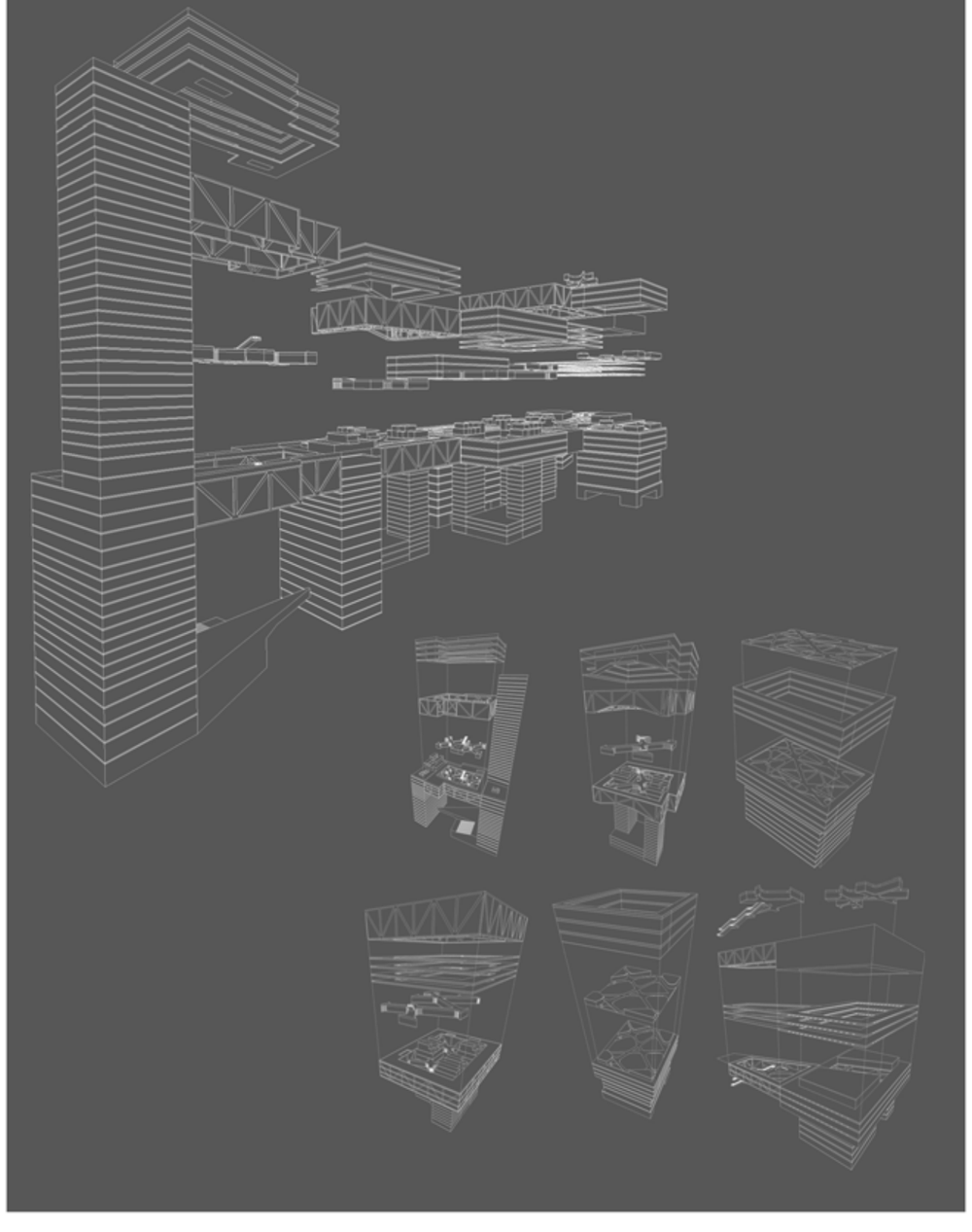
DESIGN

SCHEME 2.0 MAT > PROGRAMMATIC CLUSTERS

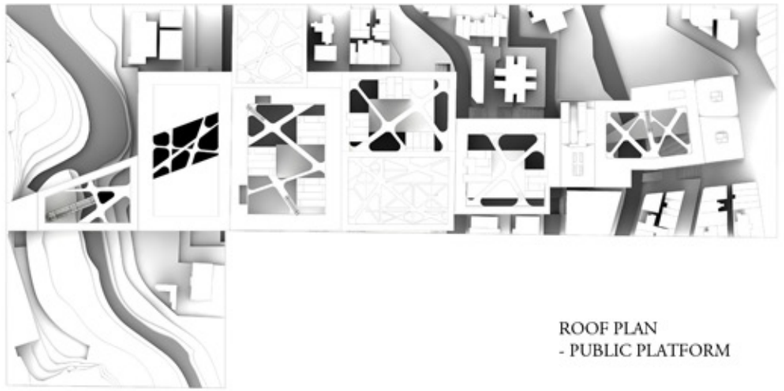


DESIGN

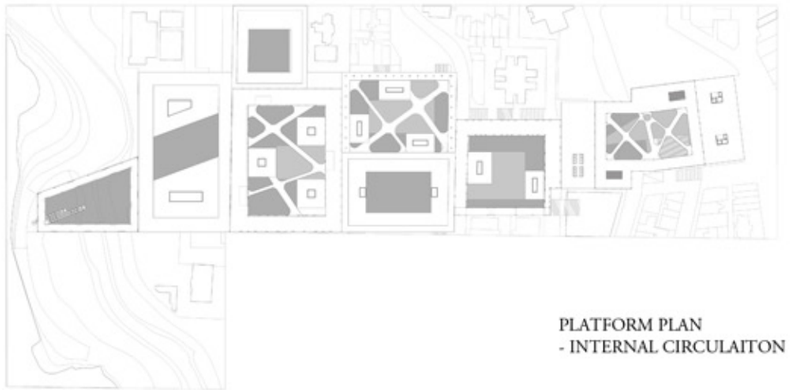
SCHEME 2.0 MAT > STRUCTURAL STRATEGIES



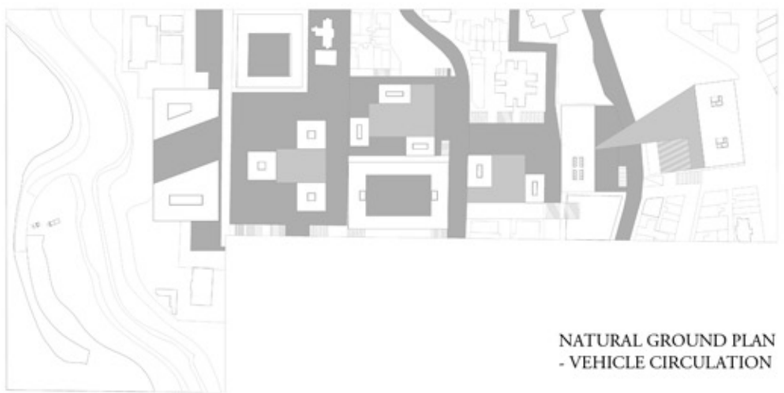
DESIGN
SCHEME 2.0 MAT > PLANS



ROOF PLAN
- PUBLIC PLATFORM

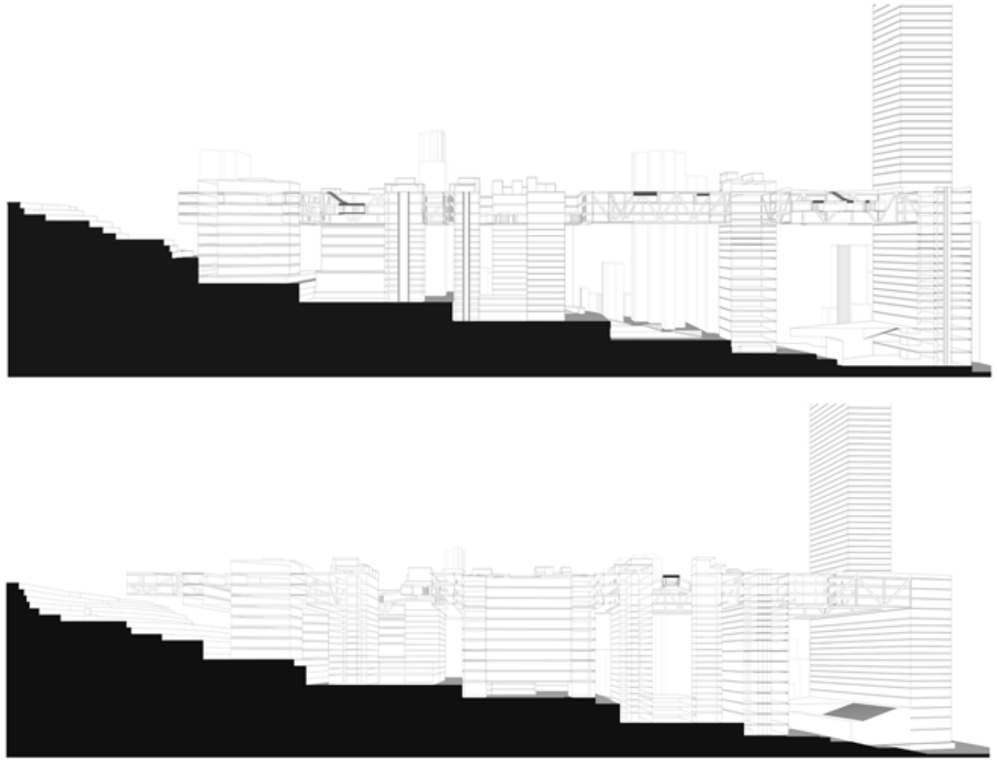


PLATFORM PLAN
- INTERNAL CIRCULAITON



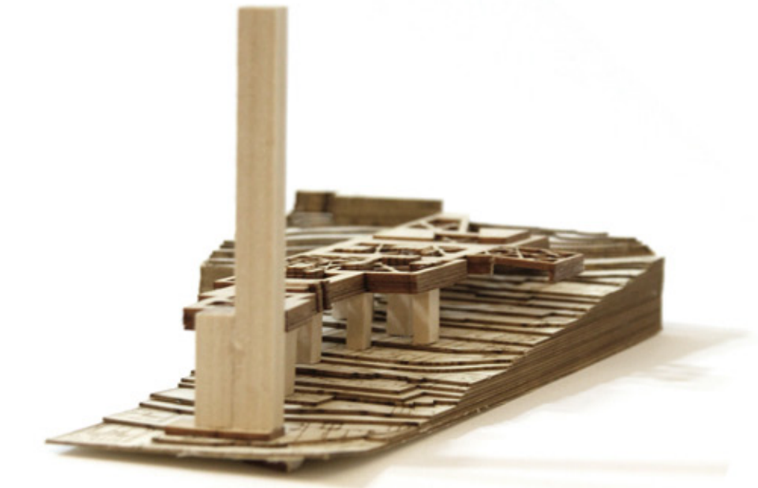
NATURAL GROUND PLAN
- VEHICLE CIRCULATION

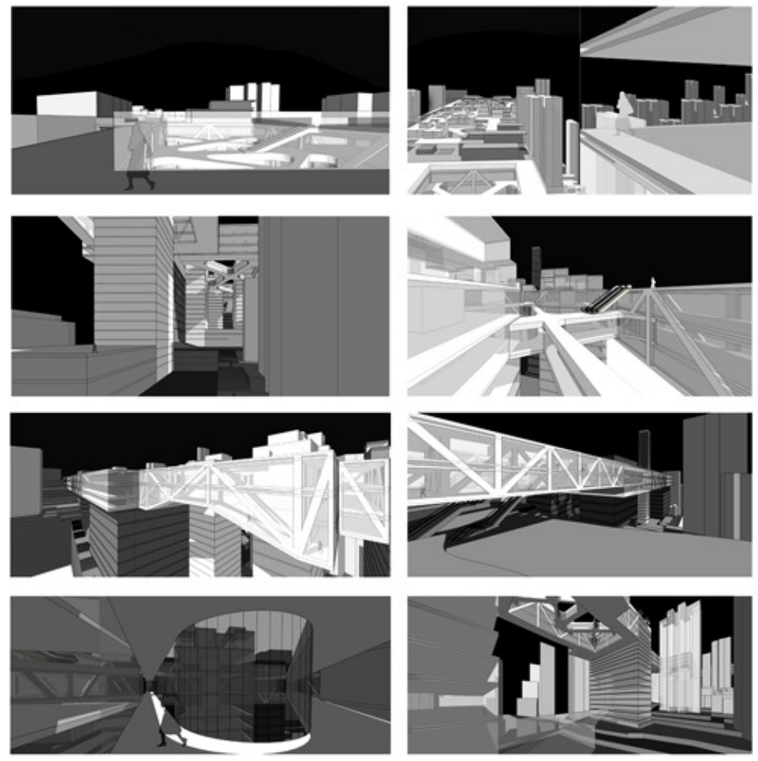
DESIGN
SCHEME 2.0 MAT > SECTIONS & ELEVATION



DESIGN

SCHEME 2.0 MAT > PERSPECTIVES



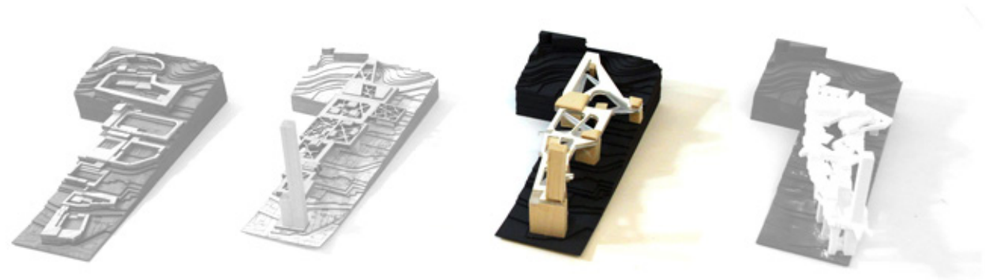


SCHEME 3.0

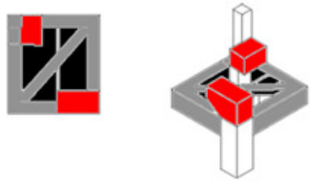
SCHEME 3.0 - TRAY

This proposal featured the strategy to reinvent the new platform and at the same time design a better micro-climate on the natural ground through allowing more natural sunlight to penetrate through. Meanwhile the figure of the new platform is modified to allow the supporting buildings to receive more light. The scheme is named as a TRAY since it has a new urban role. The tray holds all the public and civic programs unlike the typical urban planning which public programs are placed on the root of the high-rises. The tray redefines the position to locate these programs and reinvent the public/private zoning condition of a high-rise. Since the development is situated on a sloped site, it offers an opportunity to create non-hierarchical ground condition. It allows both grounds to have the primary access meaning direct access for both pedestrians and vehicles. It also propose a new building typology which a building can be subdivided into parts through introduction of grounds in different levels.

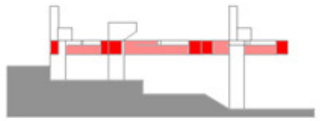
The structural strategy of this scheme is similar to the previous MAT scheme. The platform is primarily supported by the cores of the surrounding buildings. It creates two conditions, one is a beam condition similar to most of the sky-bridge designs and the other is the cantilever condition. This scheme provides a much stronger urbanistic position and can be understood more easily as one development.

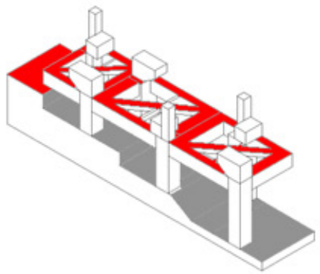


DESIGN
SCHEME 3.0 TRAY

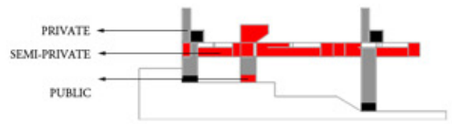


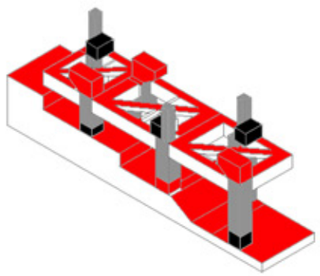
RELATIONSHIP WITH
THE EXISTING GROUND >



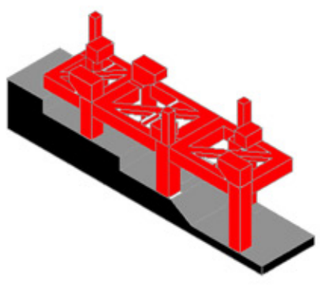


PRIVATE vs SEMI-PRIVATE
vs PUBLIC ZONES >

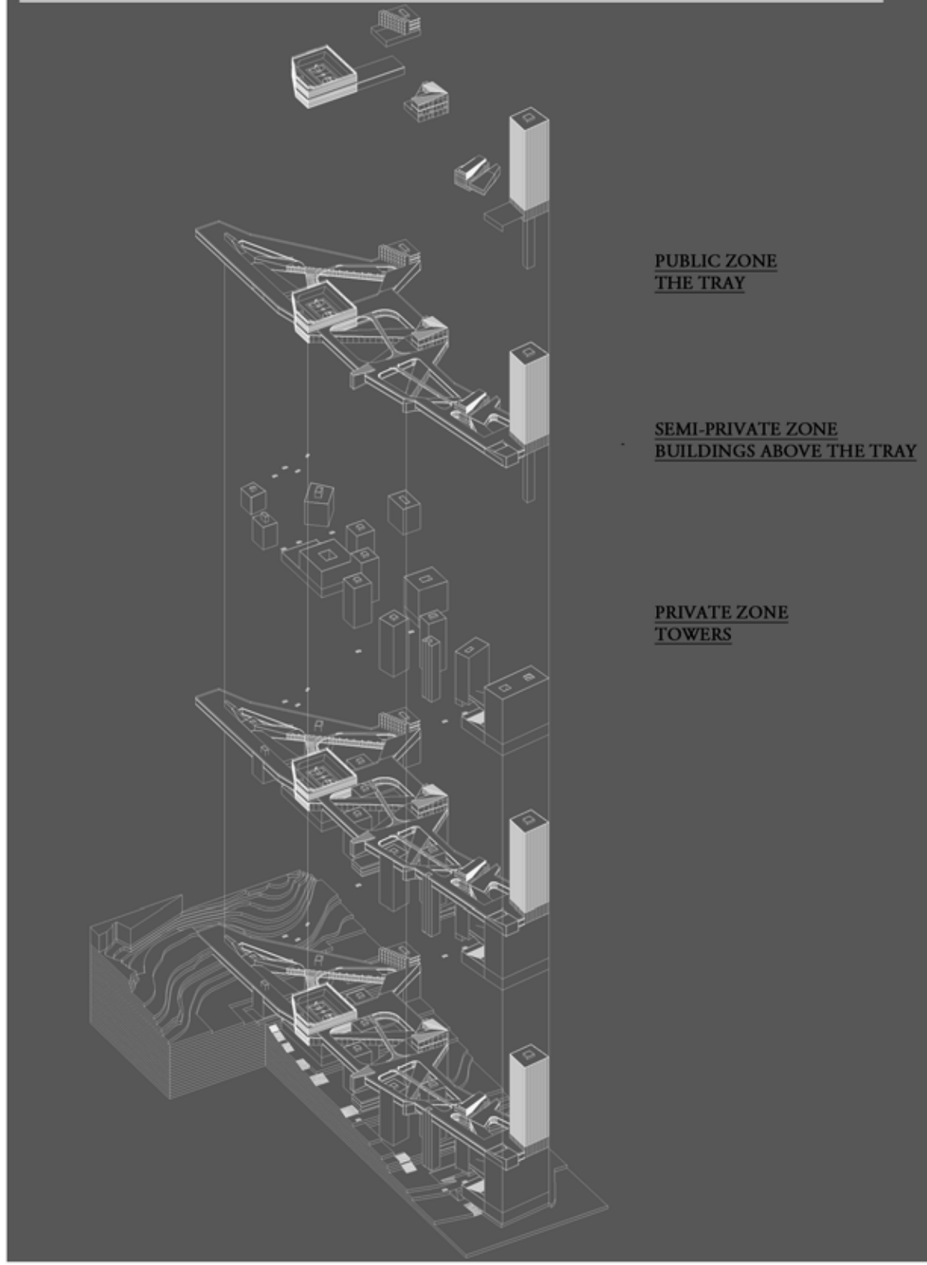




URBAN FORM >



DESIGN
SCHEME 3.0 TRAY > PROGRAMMATIC LAYERINGS

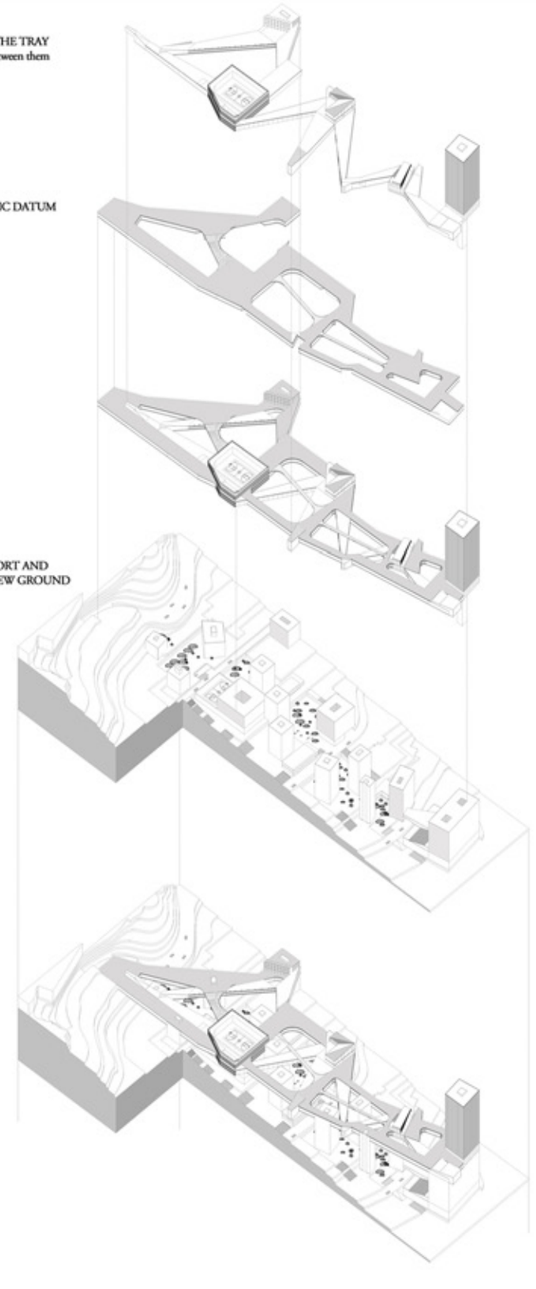


DESIGN
SCHEME 3.0 TRAY > PROGRAMMATIC CLUSTERS

1. PUBLIC PROGRAM ON THE TRAY
and the CONNECTION between them

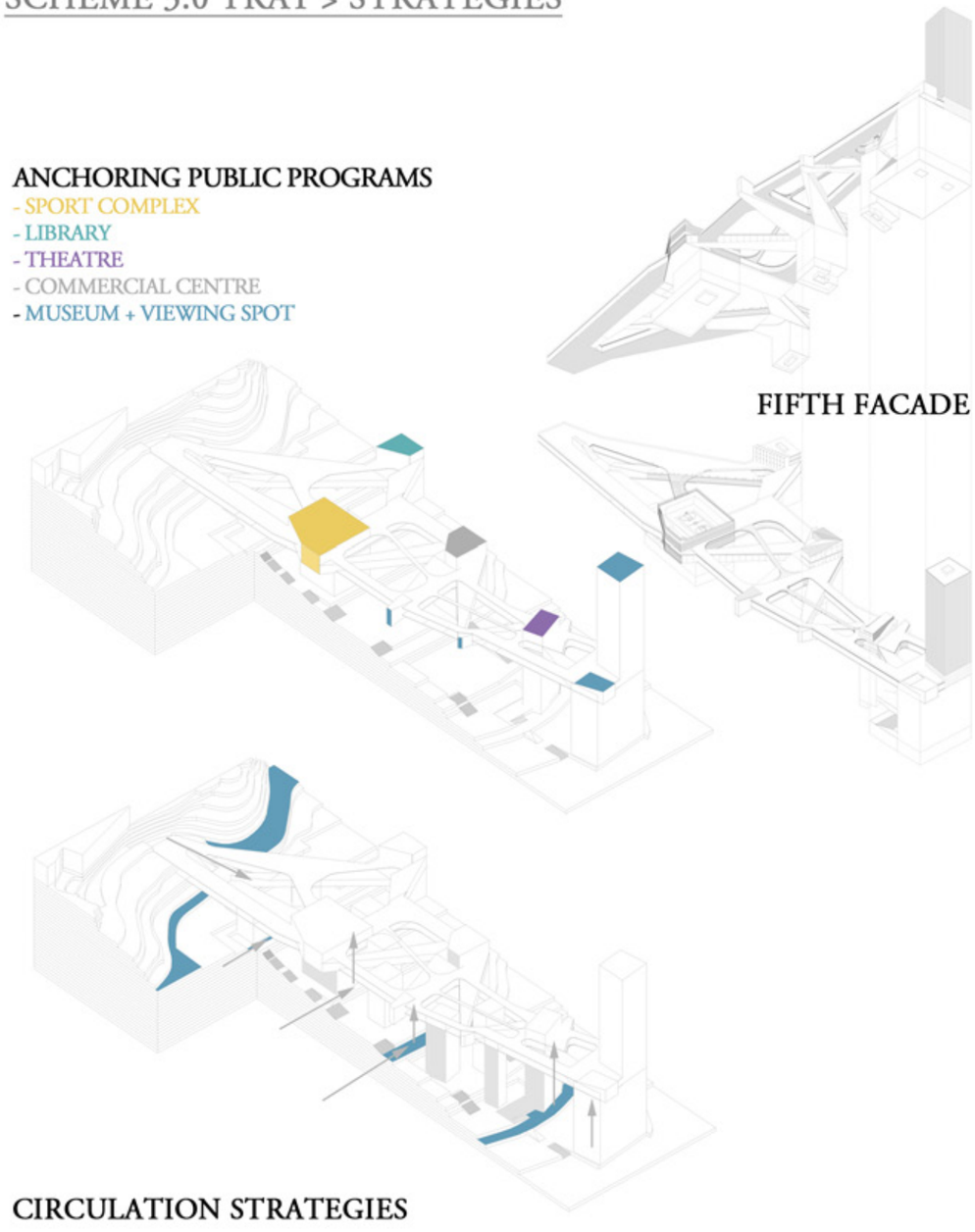
2. the TRAY - the NEW PUBLIC DATUM

3. BUILDINGS THAT SUPPORT AND
CIRCULATE FOR THE NEW GROUND



DESIGN
SCHEME 3.0 TRAY > STRATEGIES

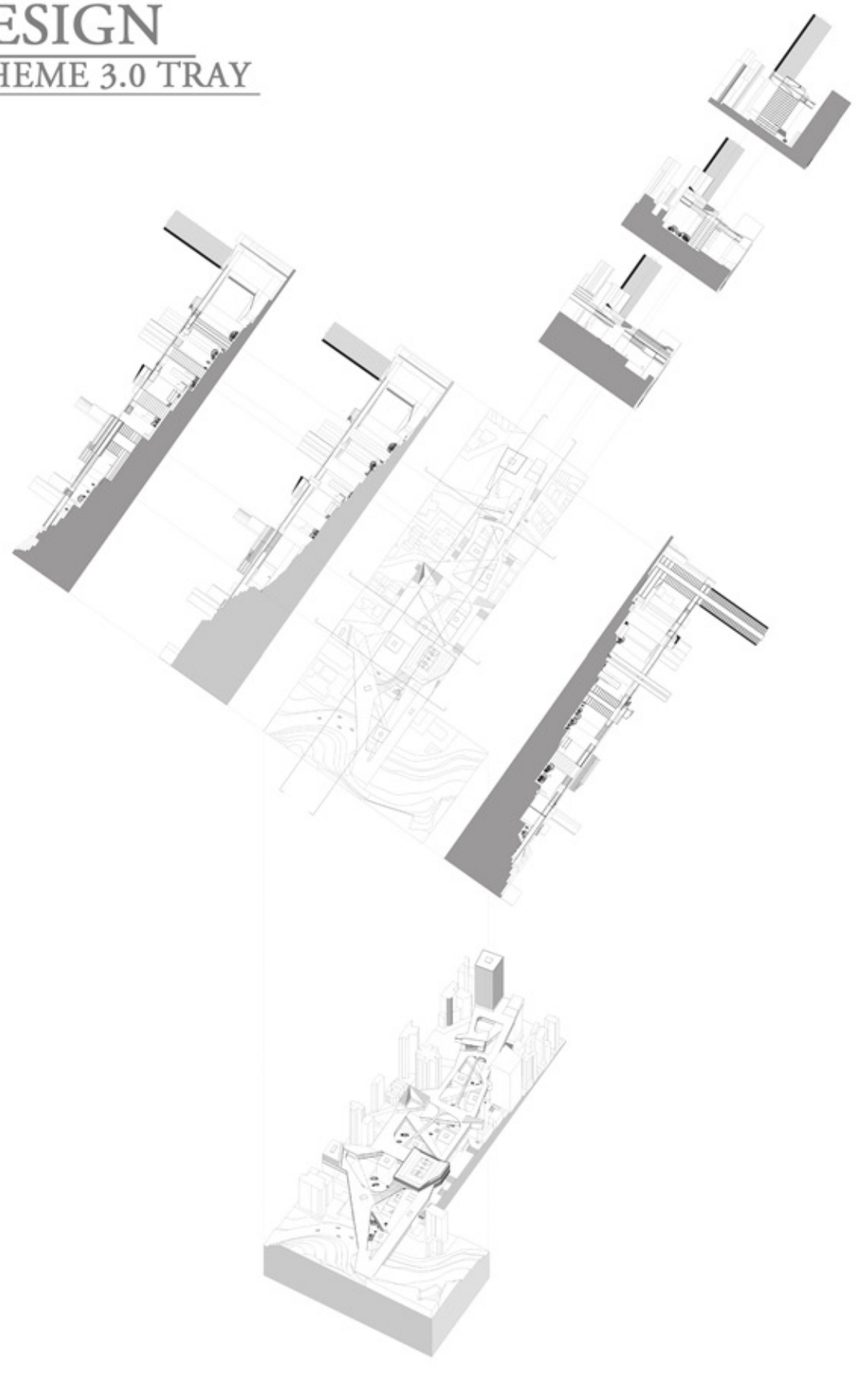
ANCHORING PUBLIC PROGRAMS
- SPORT COMPLEX
- LIBRARY
- THEATRE
- COMMERCIAL CENTRE
- MUSEUM + VIEWING SPOT



FIFTH FACADE

CIRCULATION STRATEGIES

DESIGN
SCHEME 3.0 TRAY

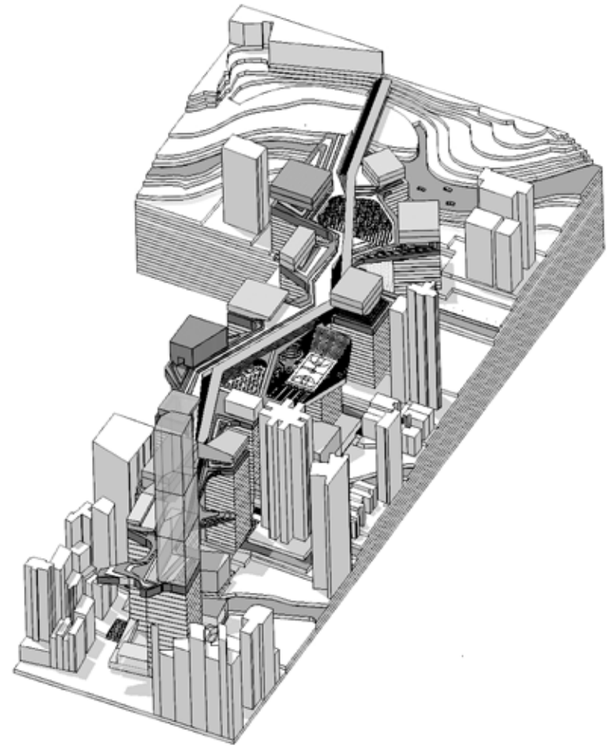


SCHEME 4.0

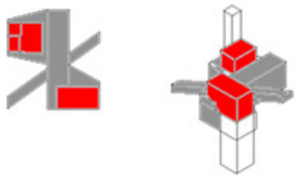
SCHEME 4.0 - CAP

This proposal attempts to reinvent the new platform which emphasizes the directionality between the mountain and the harbor. A clear axis is introduced between buildings. The axis is thickened to accommodate the major circulation while perform as the main structural element. The thickness of the platform decreases gradually from the axis for both programmatic and structural reasons. The platform extended from the axis forms a bubble-like condition around the buildings. It maximizes the amount of light to reach the buildings and provides a clearer relationship between the buildings and the platform figure.

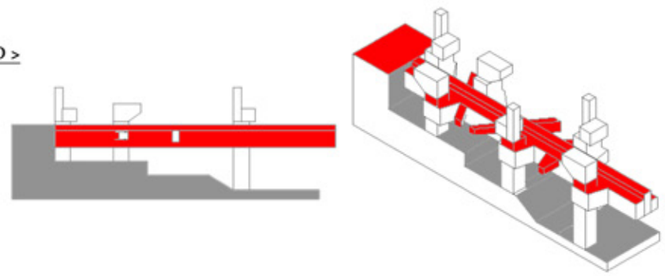
Similar to previous schemes, this scheme proposes a new typology which reversing the sectional relationship between private and public and the platform will house most of the public program and itself acts as a new public platform and plinth for architects to redefine the suitable ground condition for the public buildings. Compare to the naturally sloped ground, the platform provides a new flat surface which is a relatively scarce ground condition in Hong Kong.



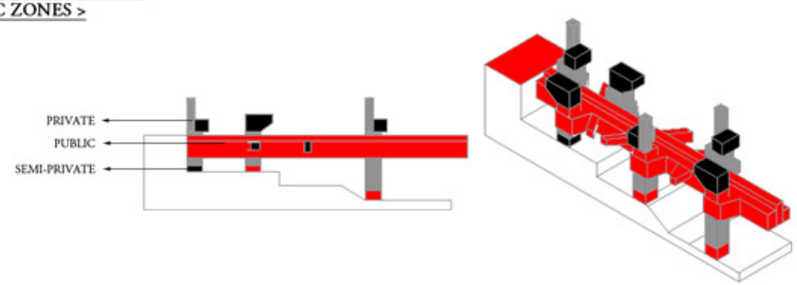
DESIGN
SCHEME 4.0 CAP



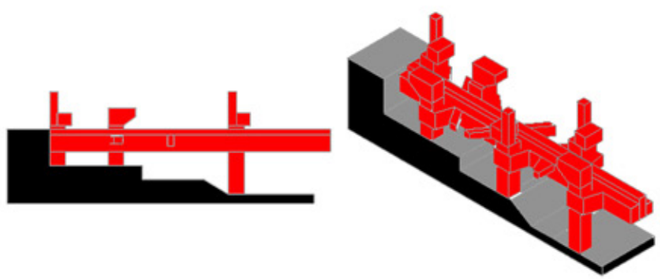
RELATIONSHIP WITH
THE EXISTING GROUND >



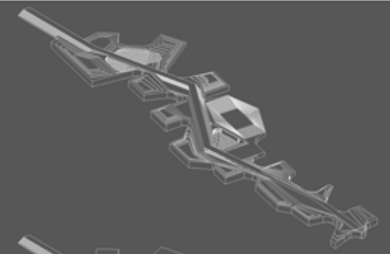
PRIVATE vs SEMI-PRIVATE
vs PUBLIC ZONES >



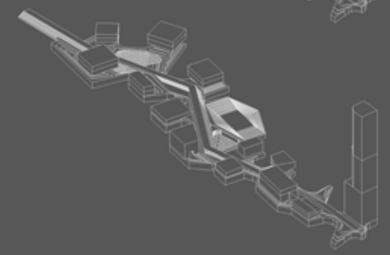
URBAN FORM >



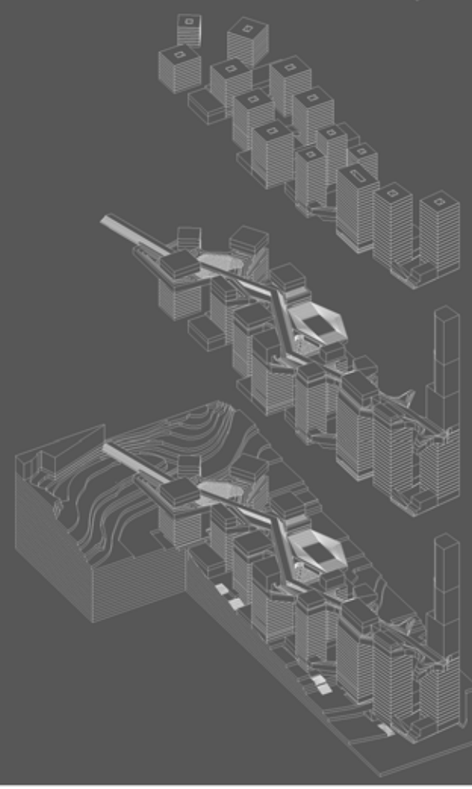
DESIGN
SCHEME 4.0 CAP > PROGRAMMATIC LAYERINGS



PUBLIC ZONE
THE CAP



SEMI-PRIVATE ZONE
BUILDINGS ABOVE THE CAP



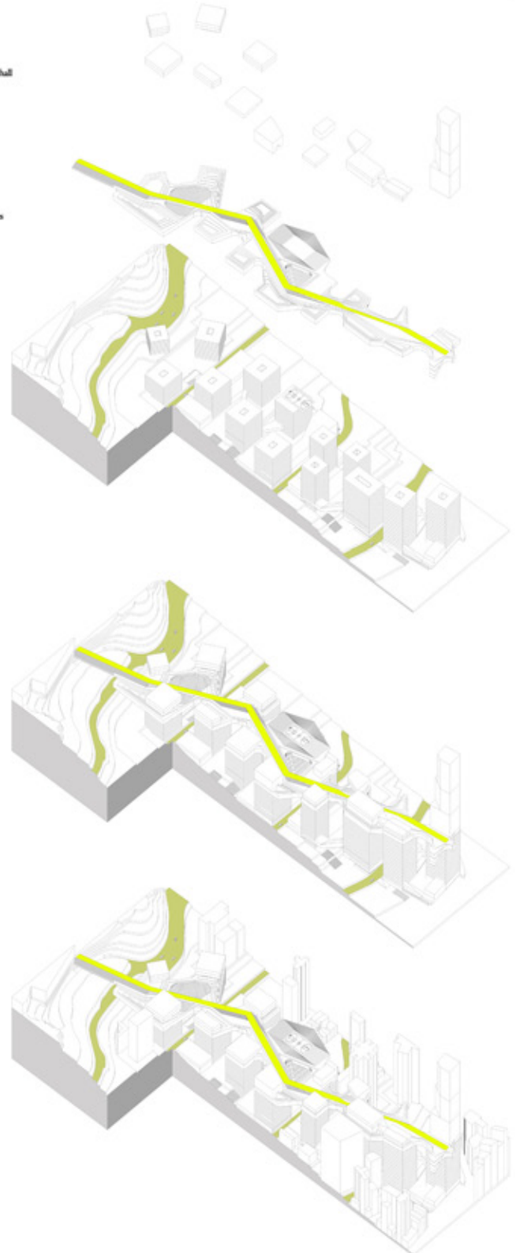
PRIVATE ZONE
TOWERS

DESIGN
SCHEME 4.0 CAP > PROGRAMMATIC CLUSTERS

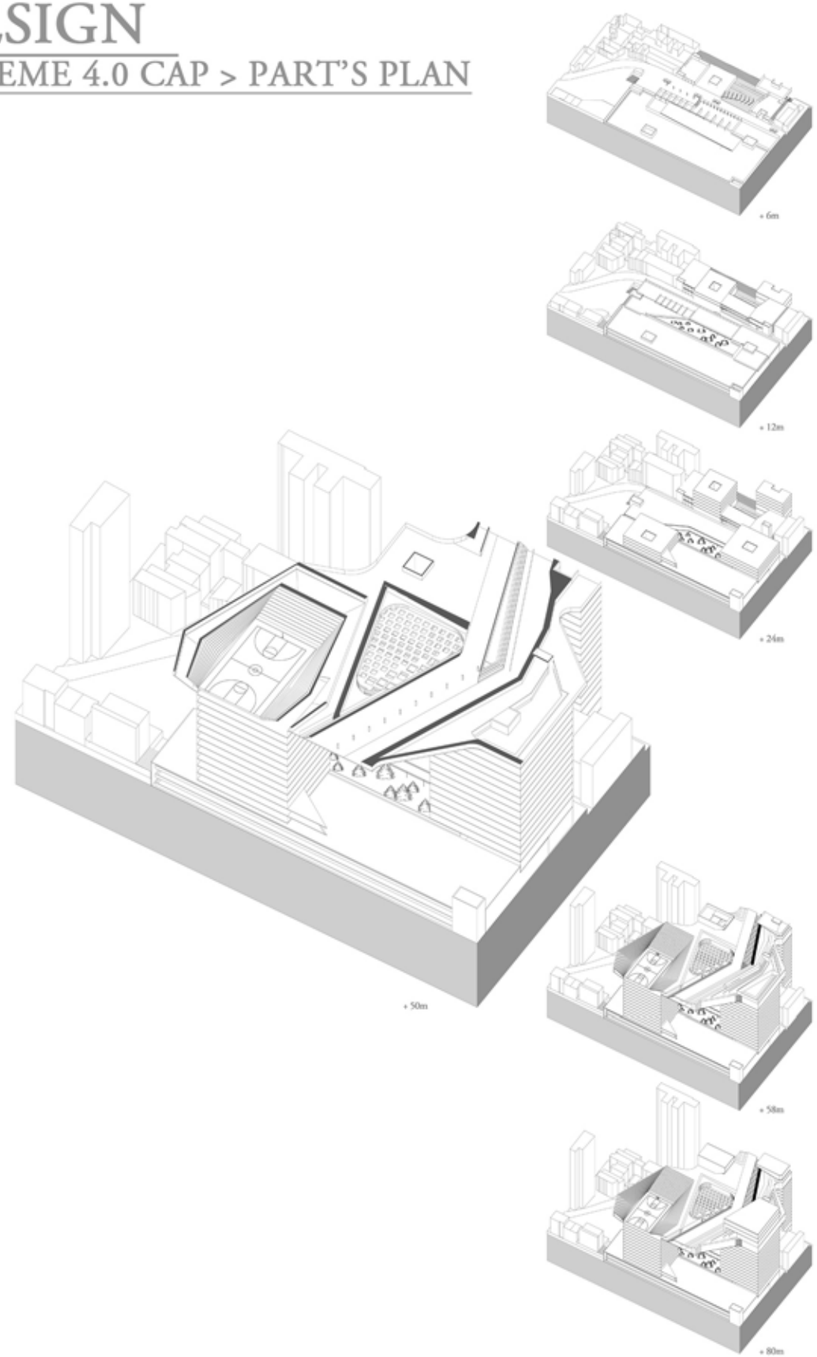
public programs -
theatre, library, sports fields, museum, convention hall

public tray and axis -
surface that can accomodate programs and activities

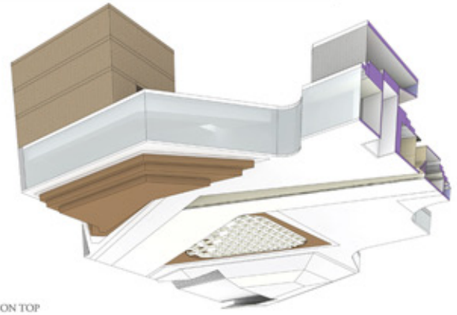
residential towers and parking -
natural ground that house different public programs and parking at the same time transport the pedestrians to the elevated tray.



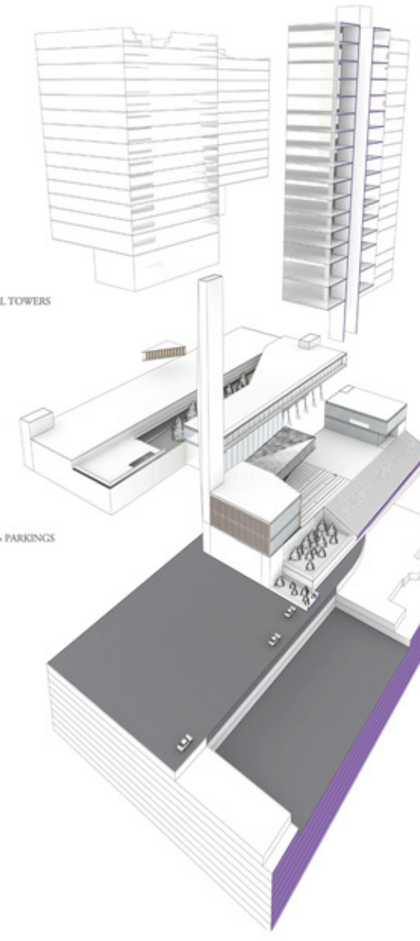
DESIGN
SCHEME 4.0 CAP > PART'S PLAN



DESIGN
SCHEME 4.0 CAP > EXPOSED PARTS



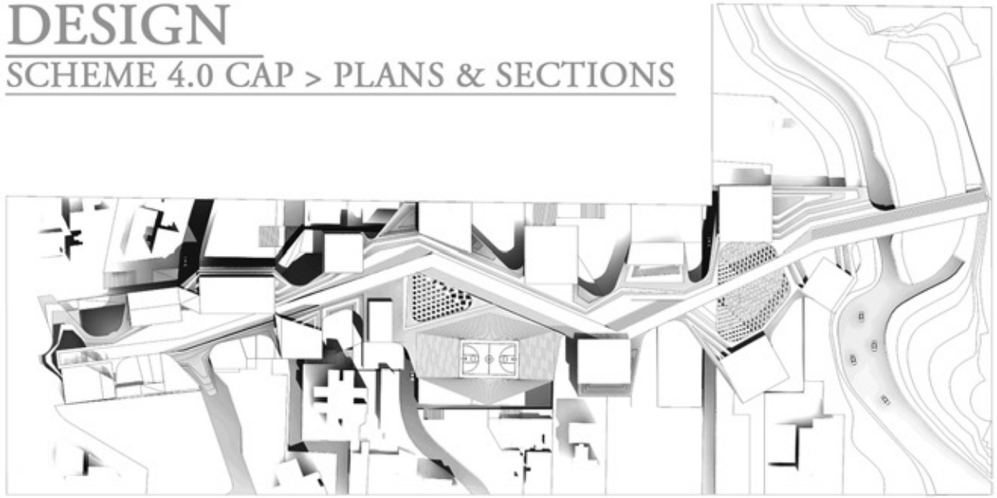
TRAY + PUBLIC PROGRAMS ON TOP



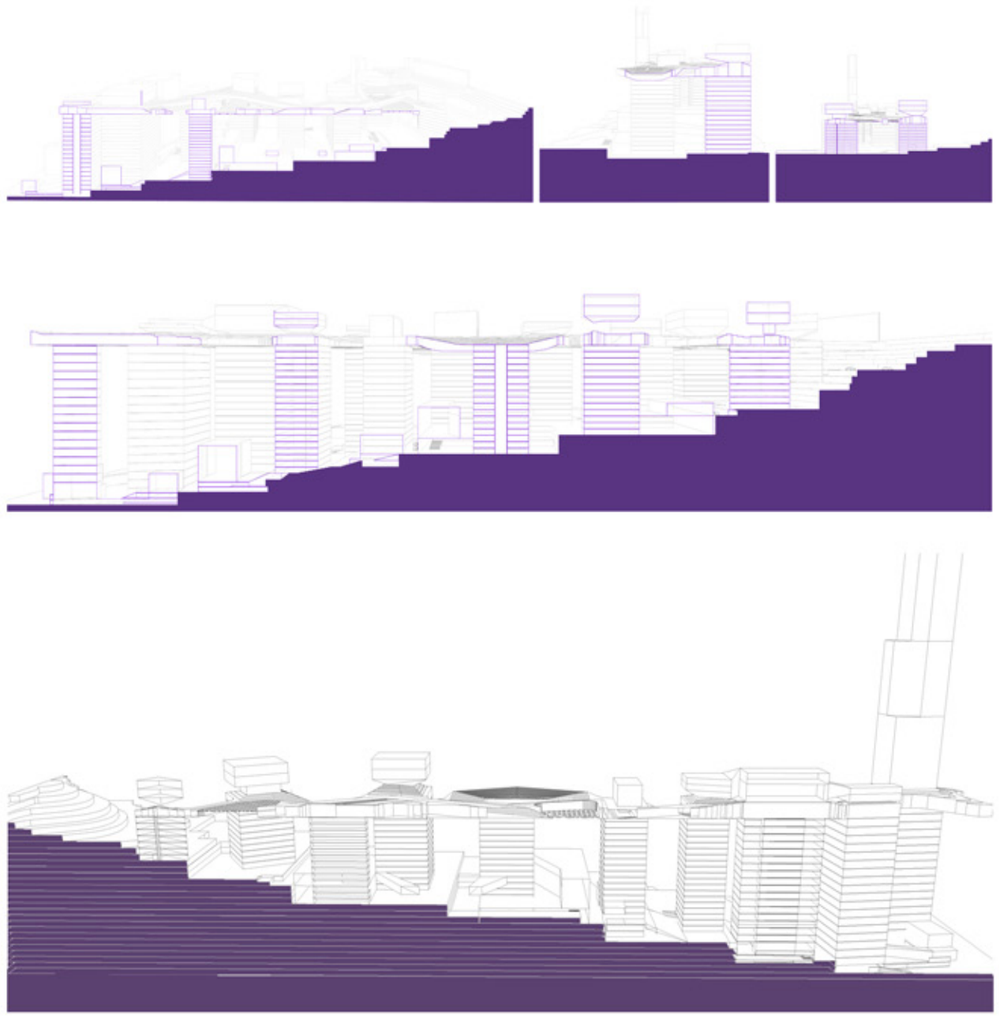
RESIDENTIAL TOWERS

PUBLIC PROGRAM + CIRCULATION + PARKINGS

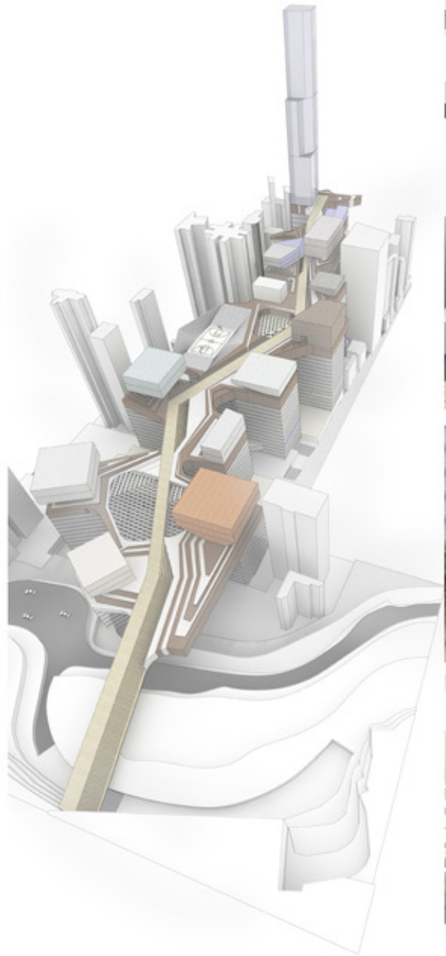
DESIGN
SCHEME 4.0 CAP > PLANS & SECTIONS

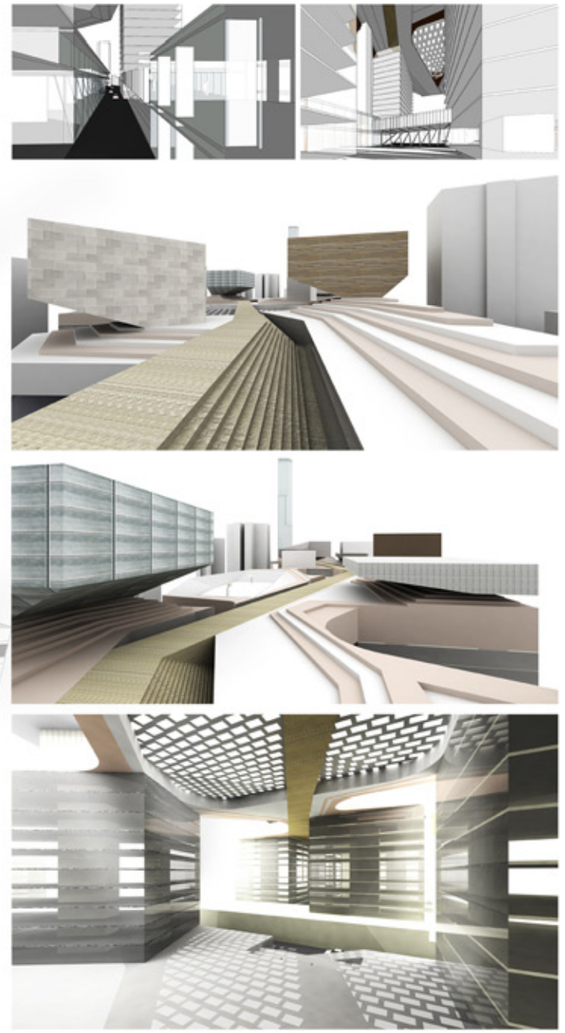


DESIGN
SCHEME 4.0 CAP > SECTIONS



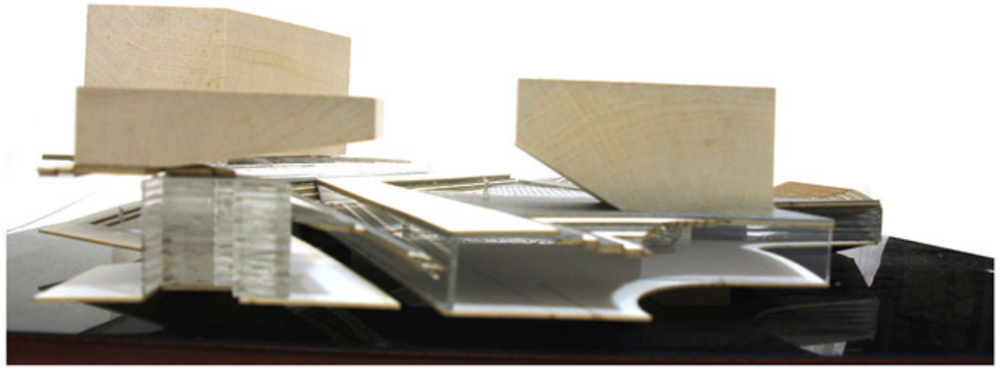
DESIGN
SCHEME 4.0 CAP > PERSPECTIVES

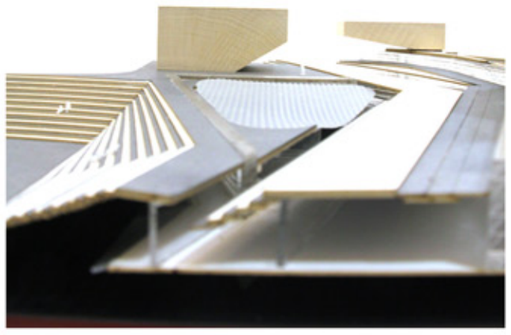




DESIGN

SCHEME 4.0 CAP > PERSPECTIVES



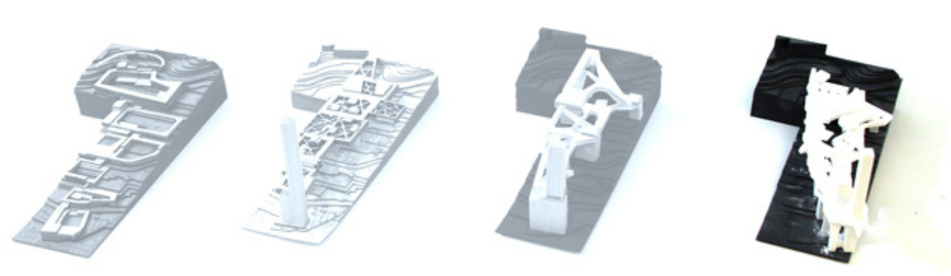


FINAL SCHEME

SCHEME 5.0 - LAMINATE

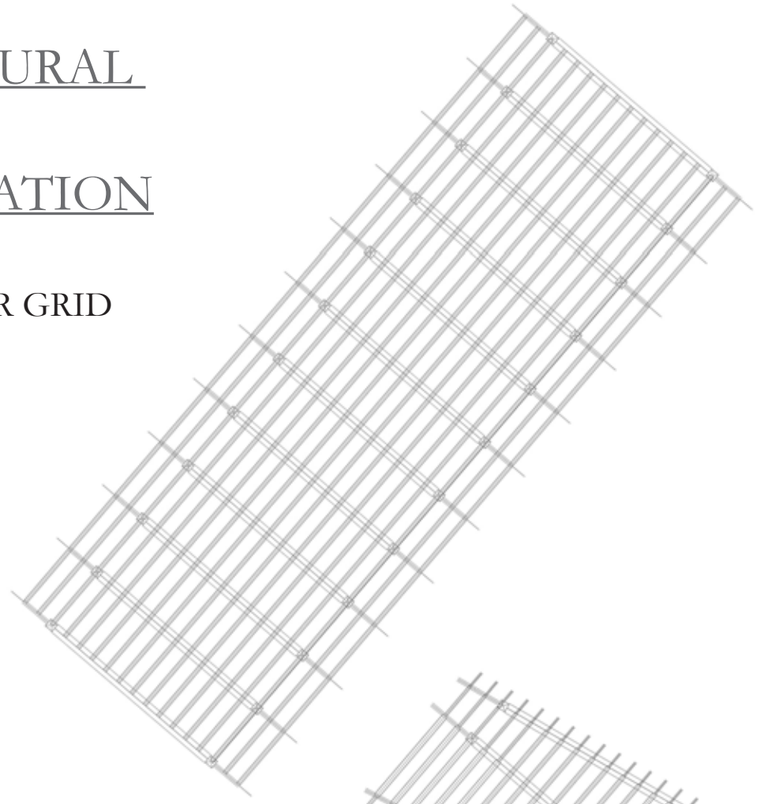
Scheme 5.0 was presented at Thesis Final Defense on December 15, 2012. In contrast with investigating the figure of the platform which is a top to bottom approach, this proposal tried to investigate the potential between scales. The major urbanistic ideas are similar to the previous schemes such as providing a reverse sectional relationship between private and public and forming a new public datum and cityscape for the public while bringing back the harbor and mountain to the heart of the city. However, this proposal is primarily driven by the structural constraints of the development and the micro-climates created for the natural ground.

The grid is modified and manipulated in response to the location of the cores, site boundary, dimensions of the structural elements and the placement of openings. Various structural requirements generates various structural systems from the strongest (deep waffle system) to the moderate (folding system) to the lightest (two-way grid system). These systems also create different conditions for circulation and spatial configuration. Different from previous schemes, this scheme proposes a new building typology which is a cone shape. This typology emphasizes the publicness of the new datum and generates a new zoning strategy for the building. This zoning provides a better profit margin since the higher level has larger floor area. It also offers better living conditions for the inhabitants. The new typology also frees the natural ground from the commercial and programmatic constraints.

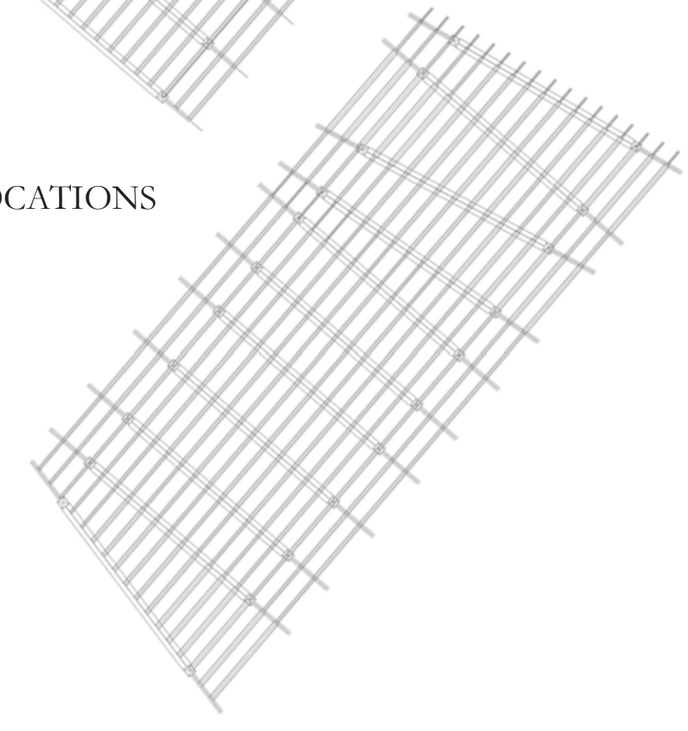


STRUCTURAL GRID GENERATION

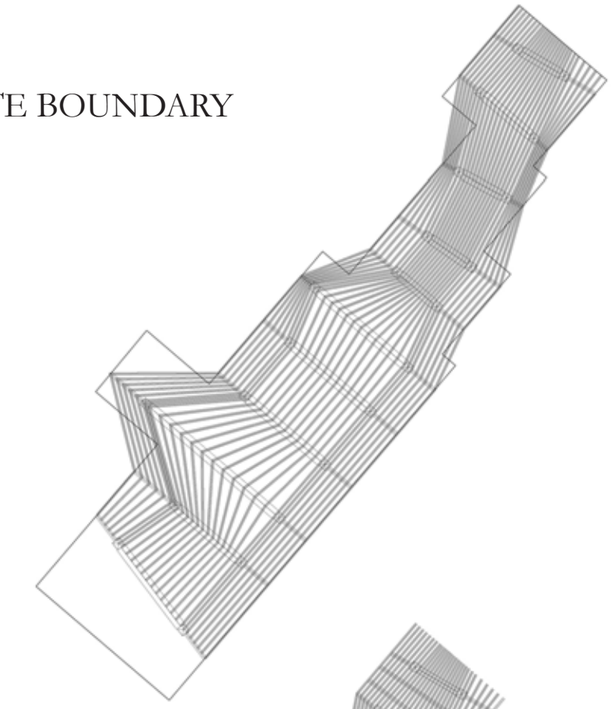
A) REGULAR GRID



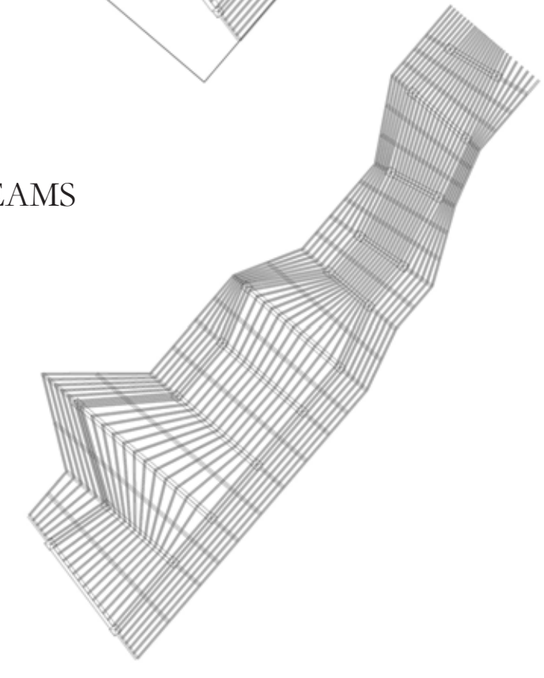
B) ADAPTING
TO CORE LOCATIONS



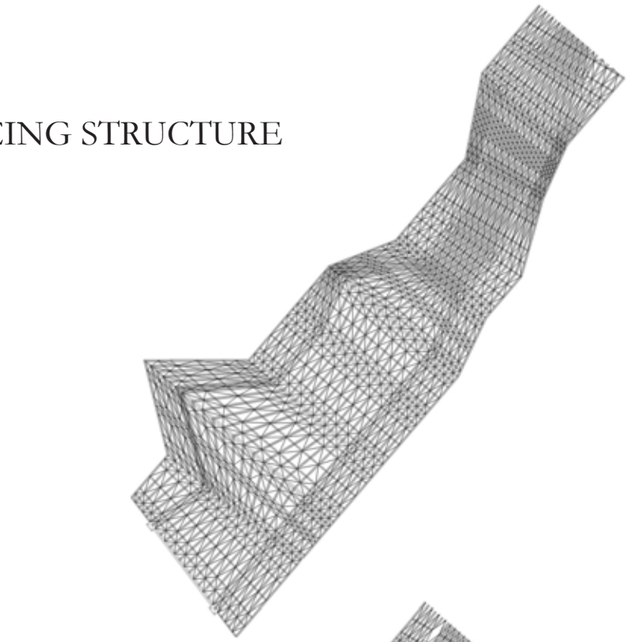
C) ADAPTING TO SITE BOUNDARY



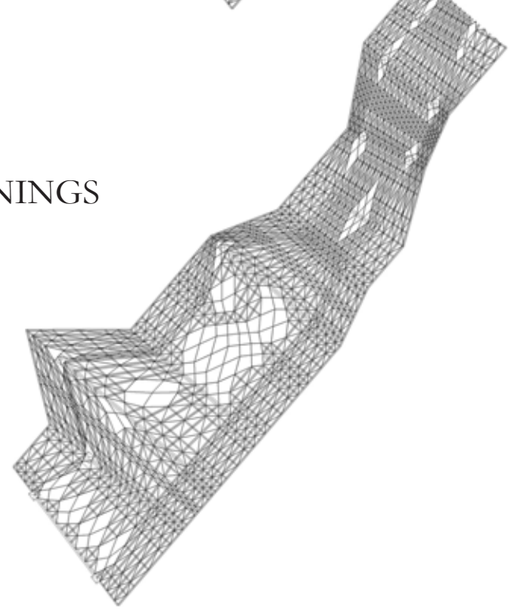
D) ADDITION OF
SECONDARY BEAMS



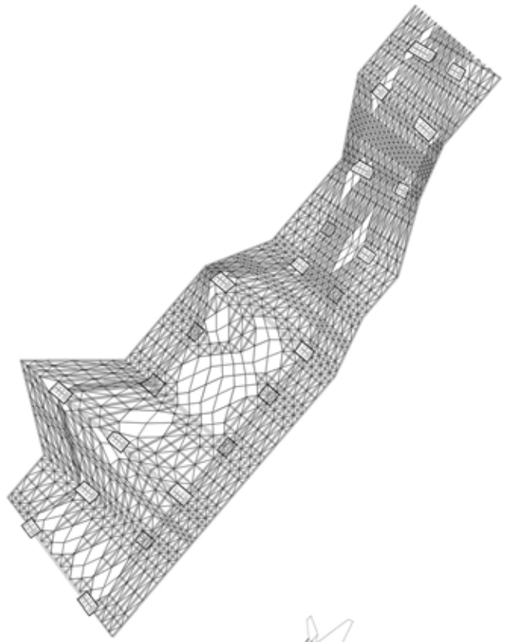
E) ADDITION OF BRACING STRUCTURE



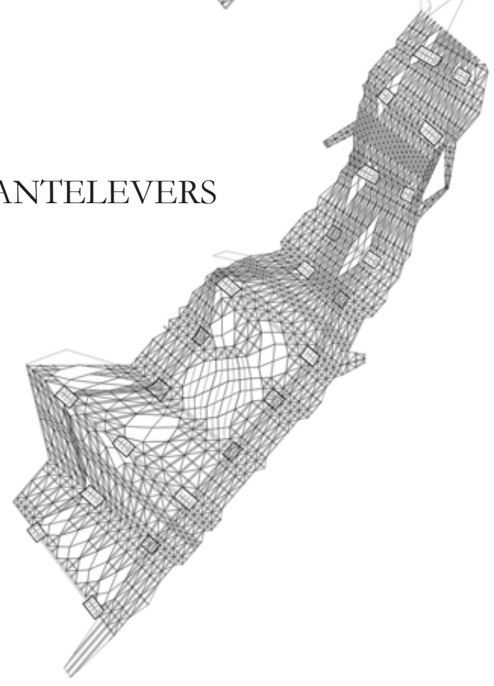
F) ADDITION OF OPENINGS



G) CORE LOCATIONS

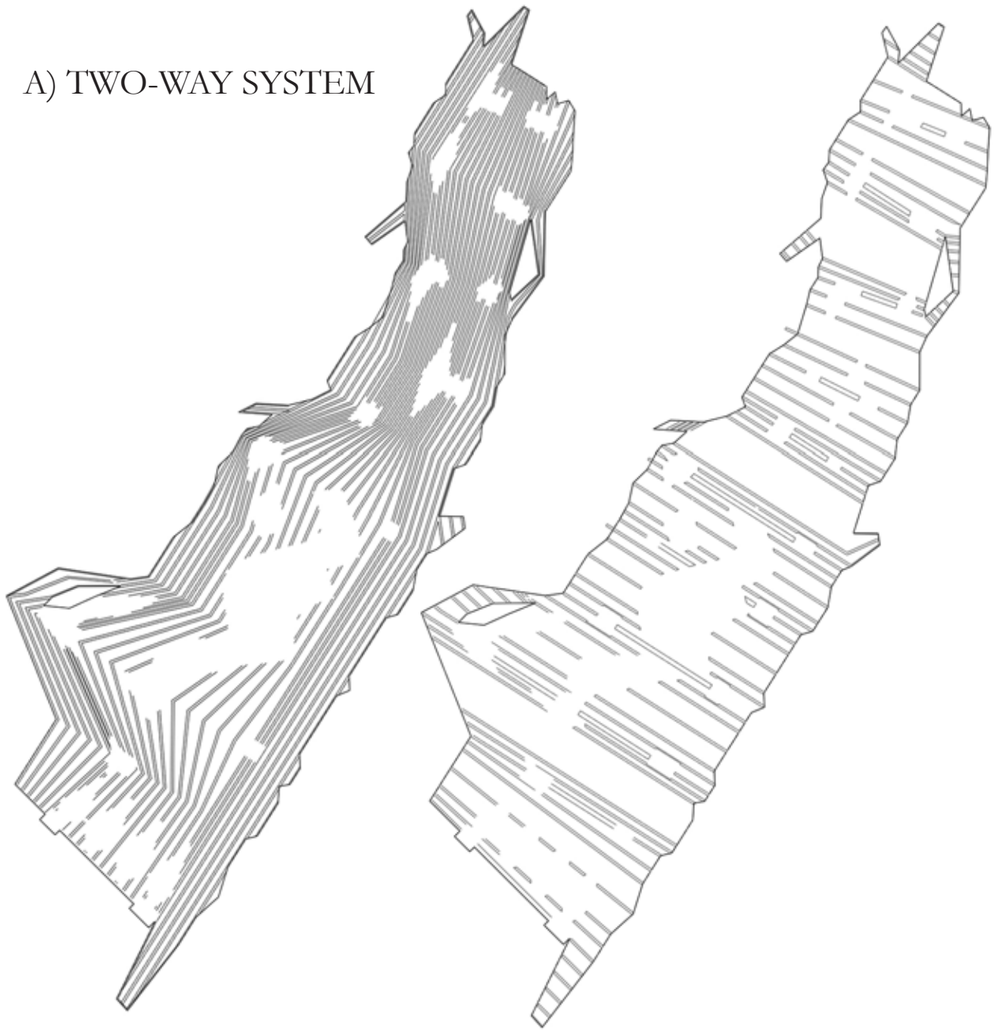


H) BRIDES AND CANTELEVERS

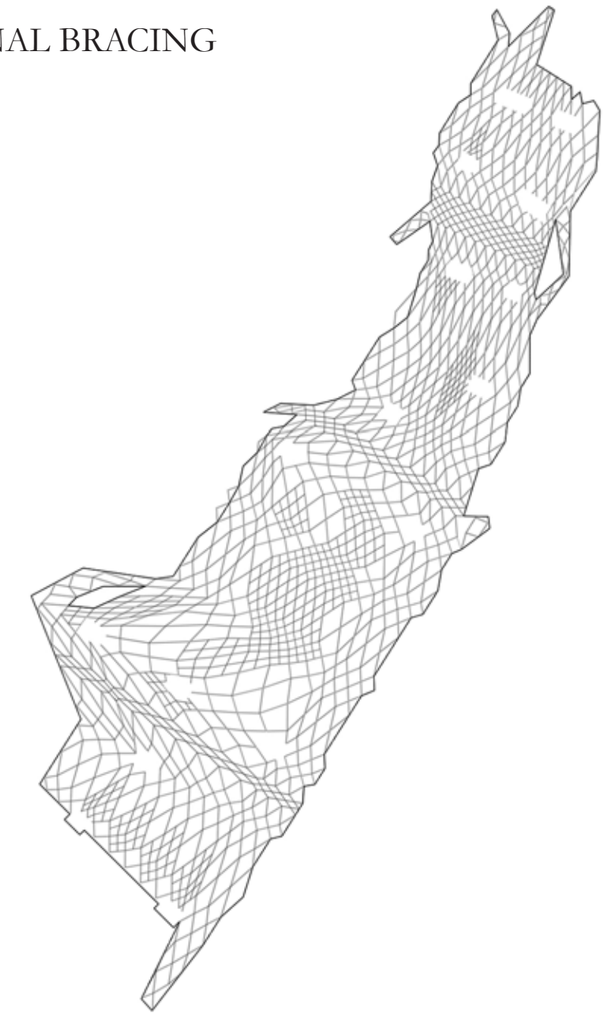


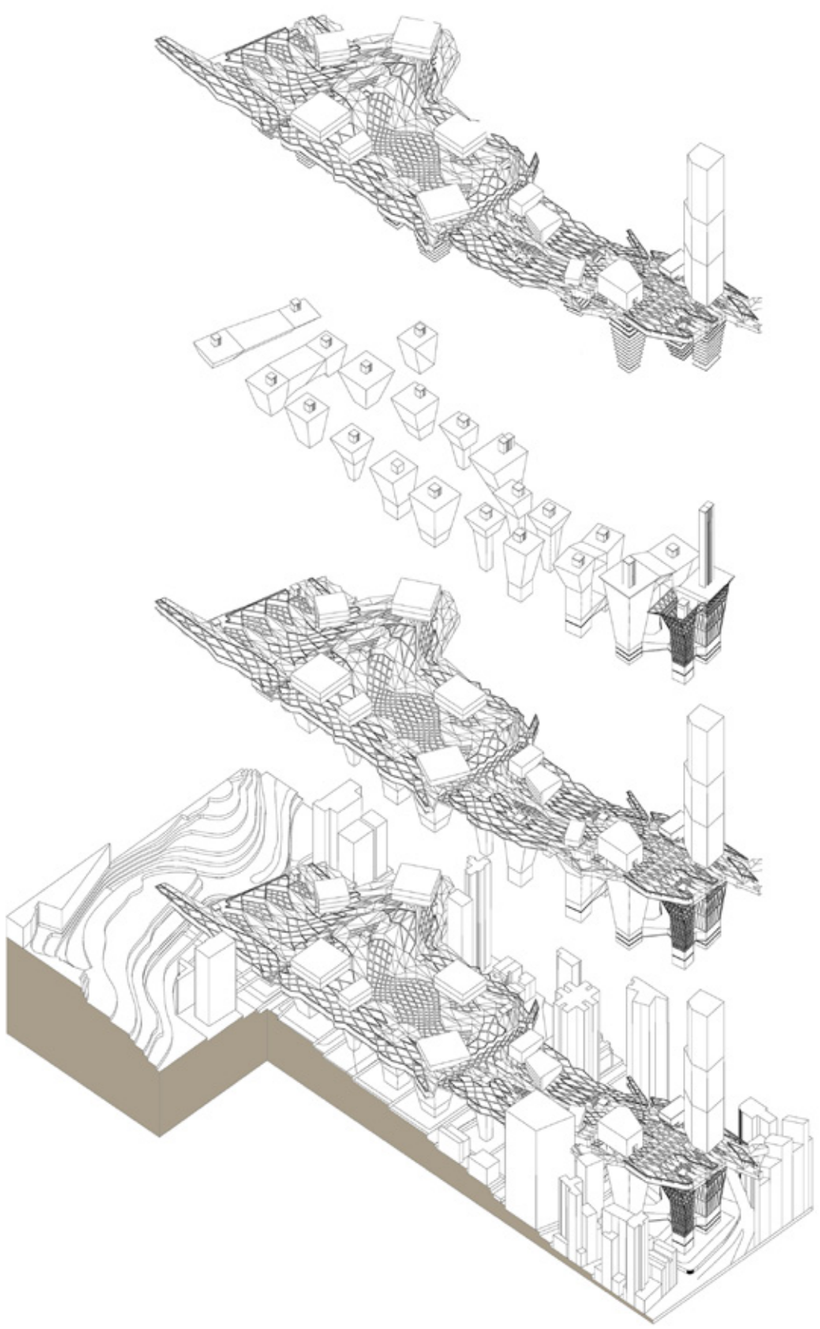
STRUCTURAL GRID

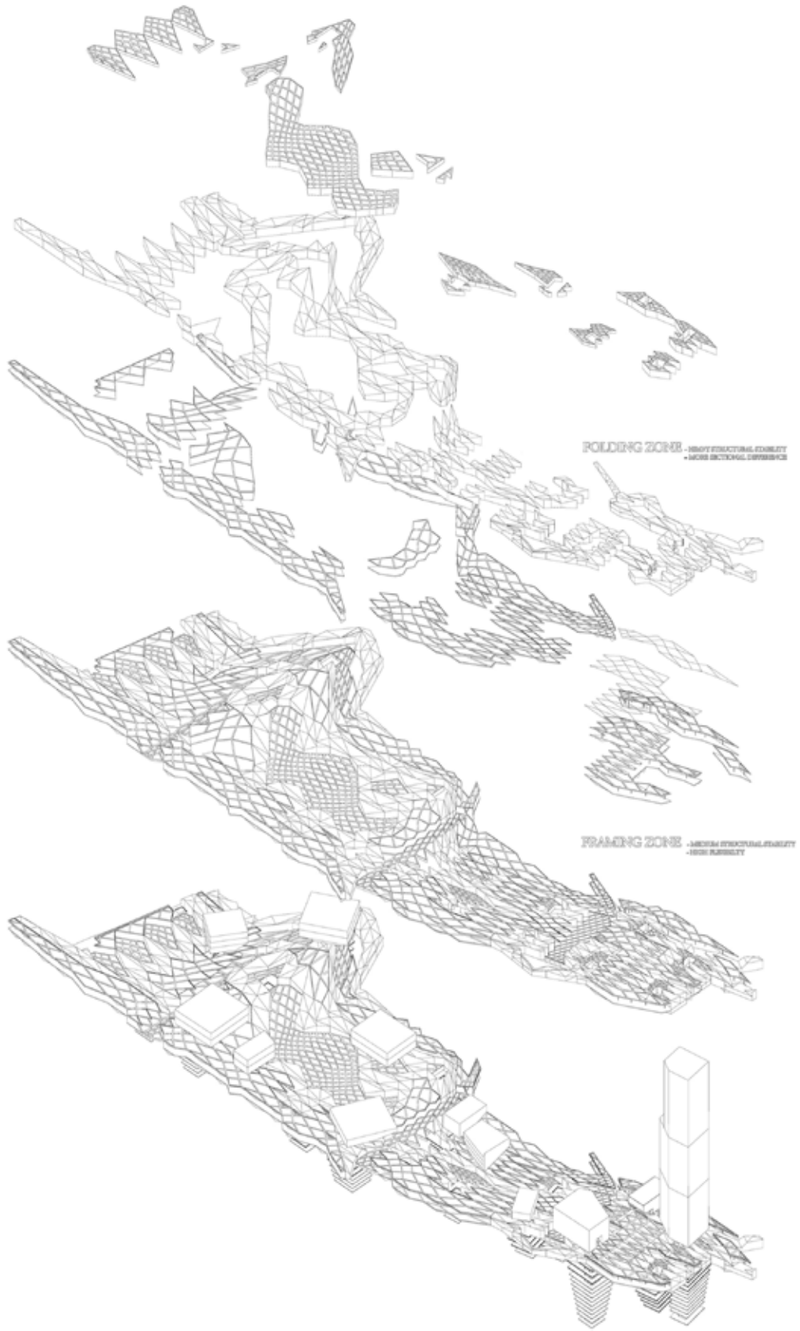
A) TWO-WAY SYSTEM

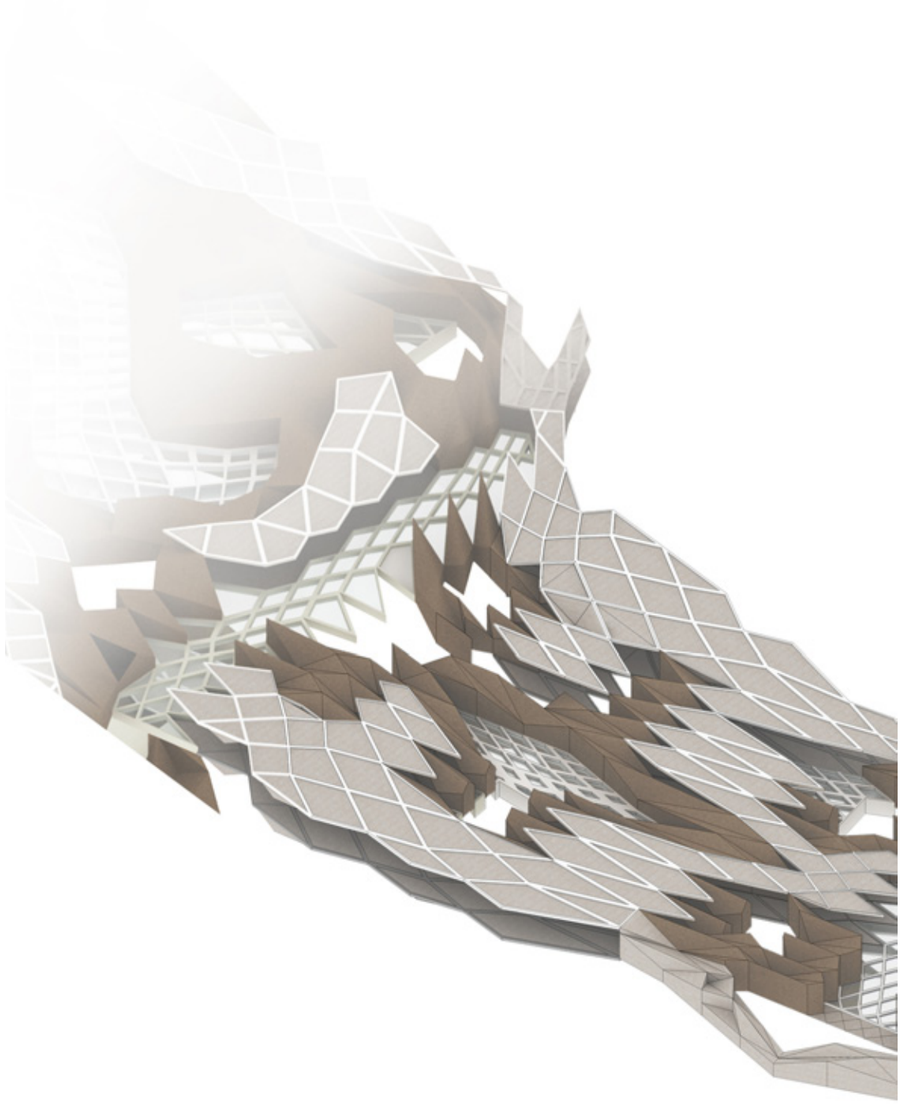


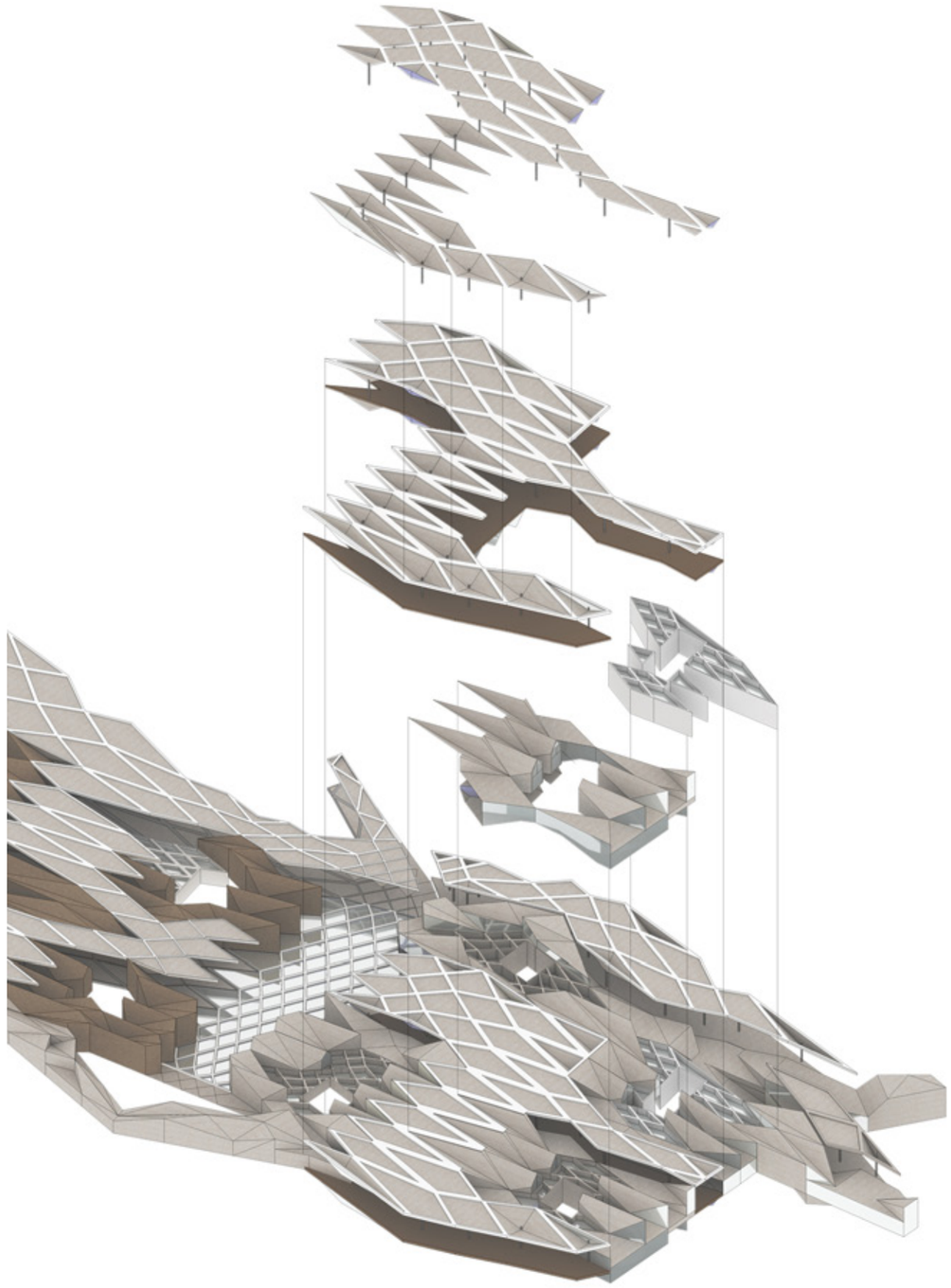
B) DIAGONAL BRACING SYSTEM

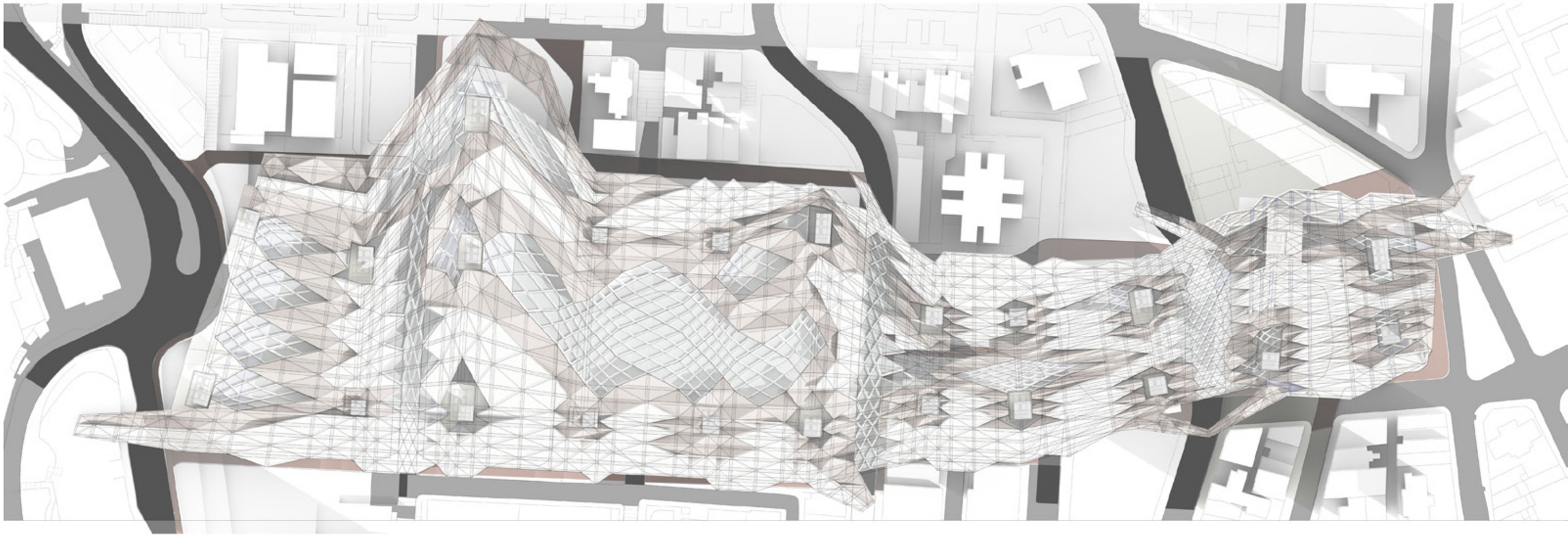


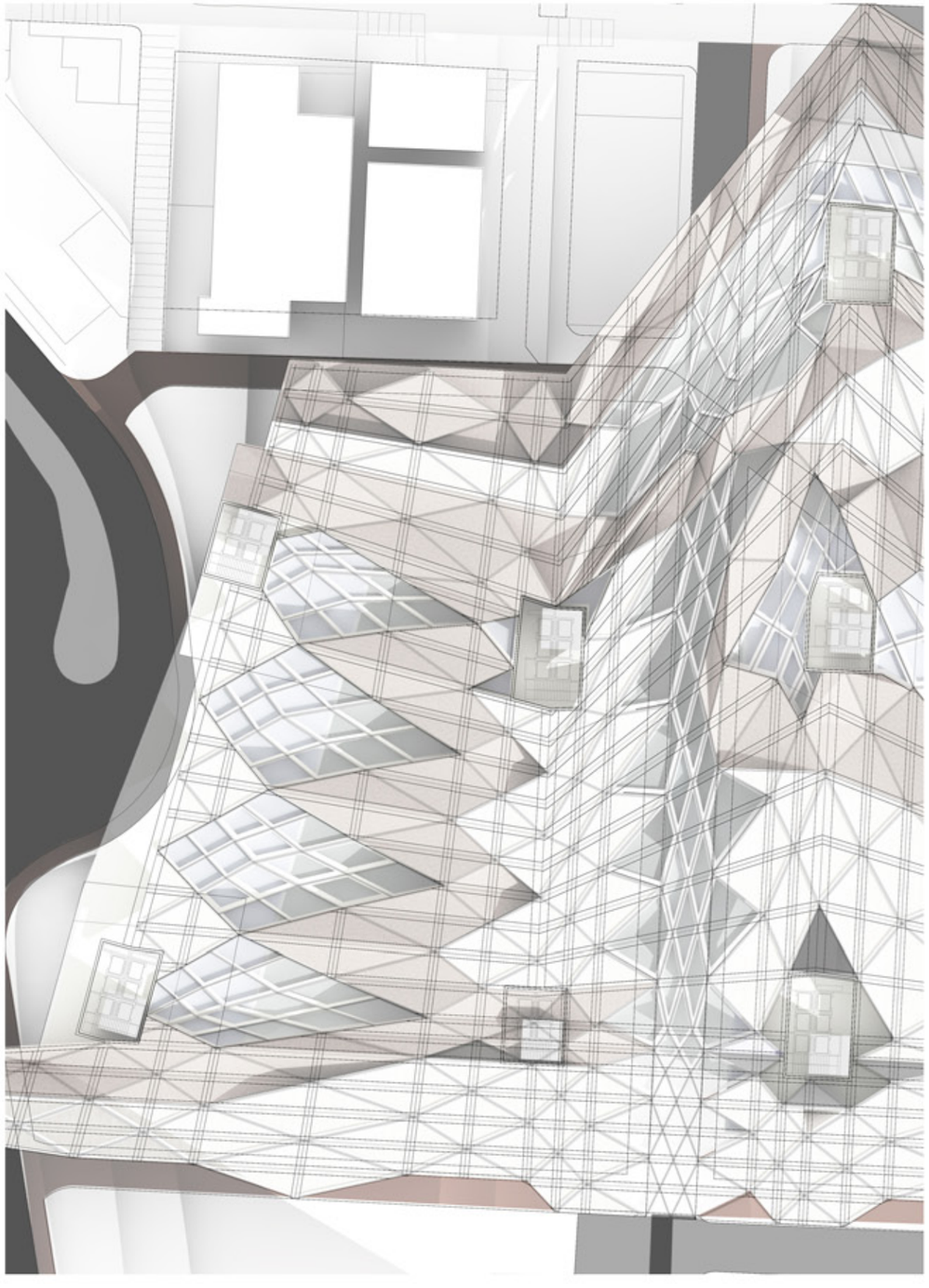


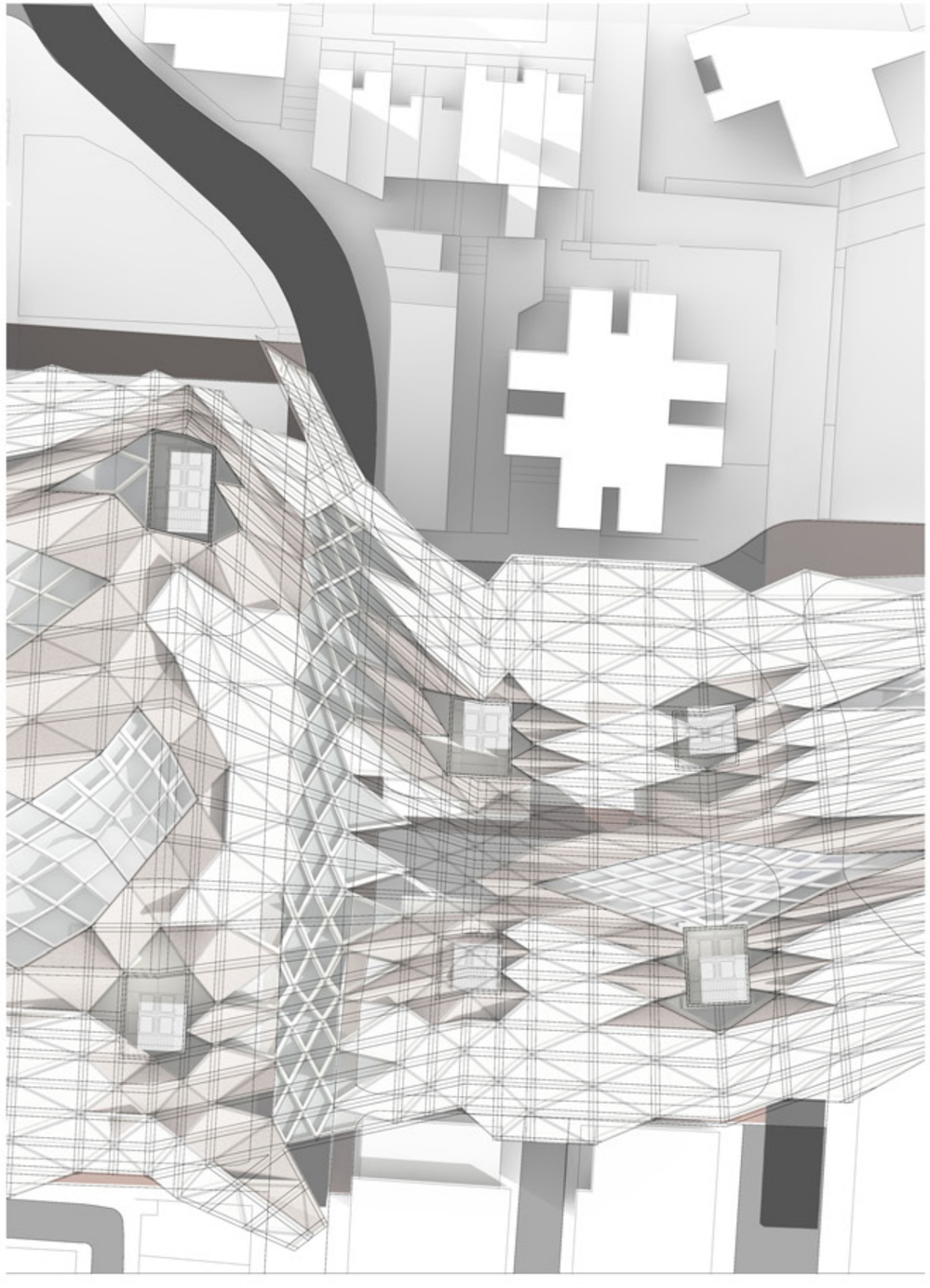

FOLDING ZONE
FRAMING ZONE

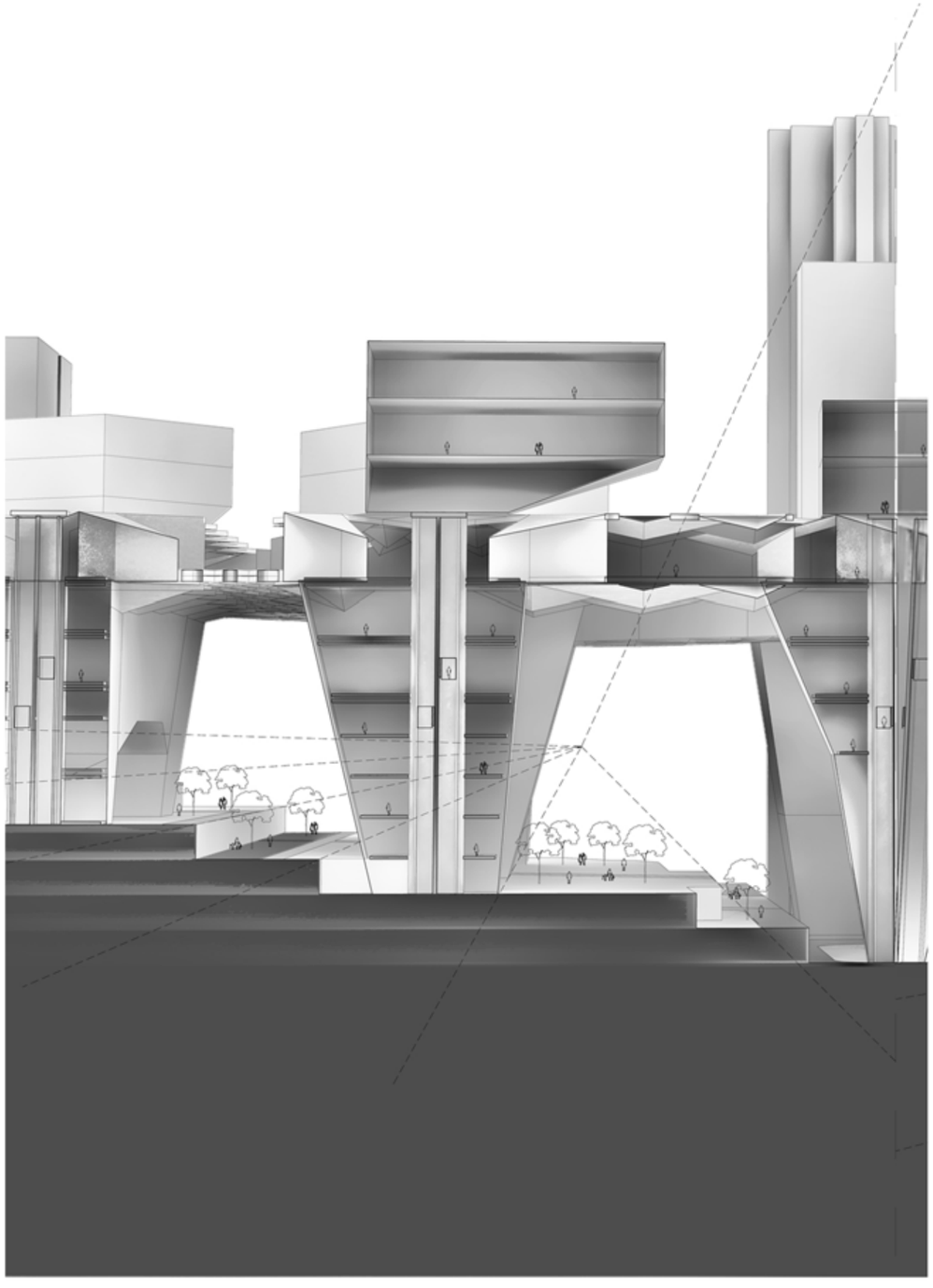


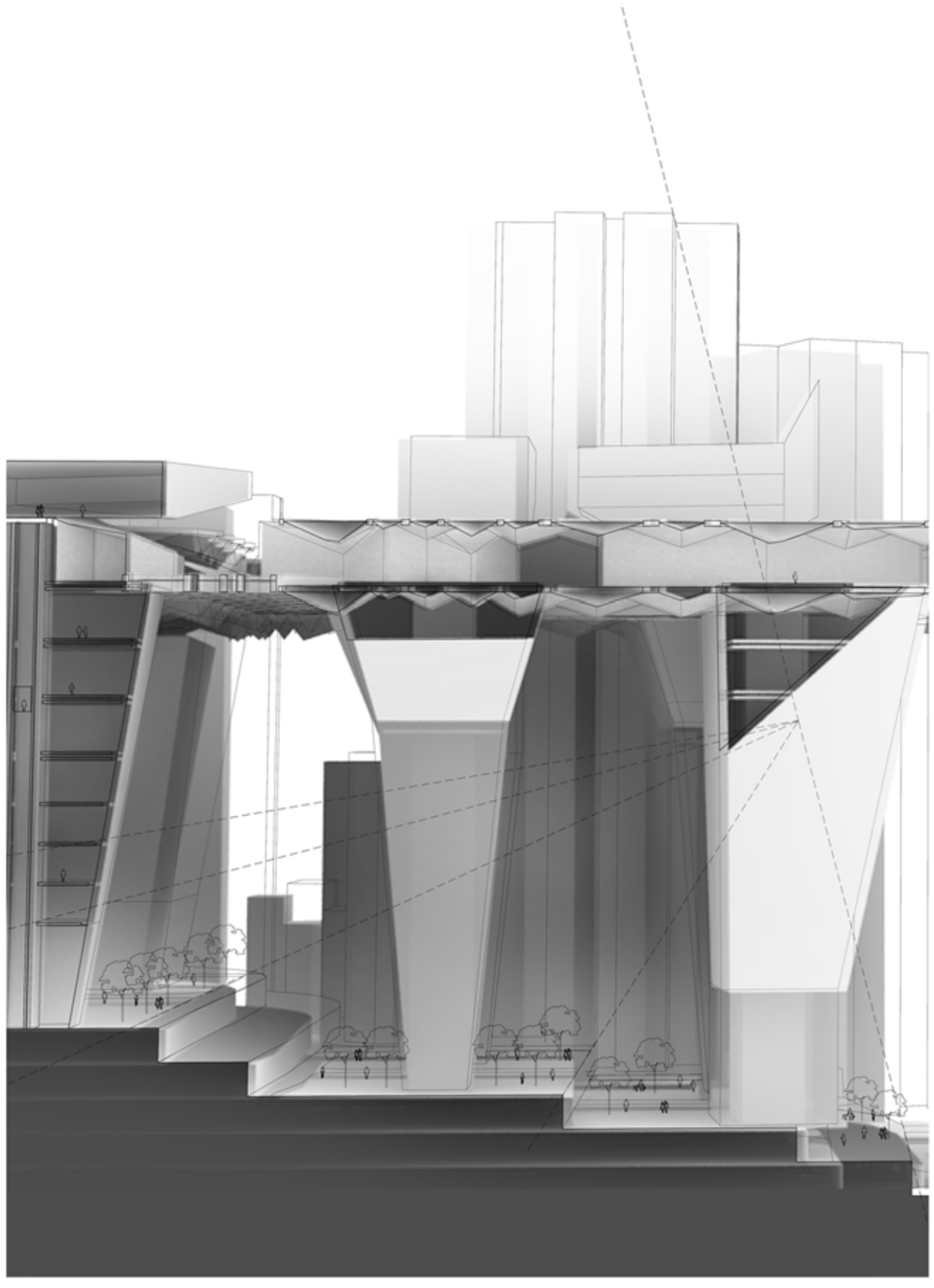


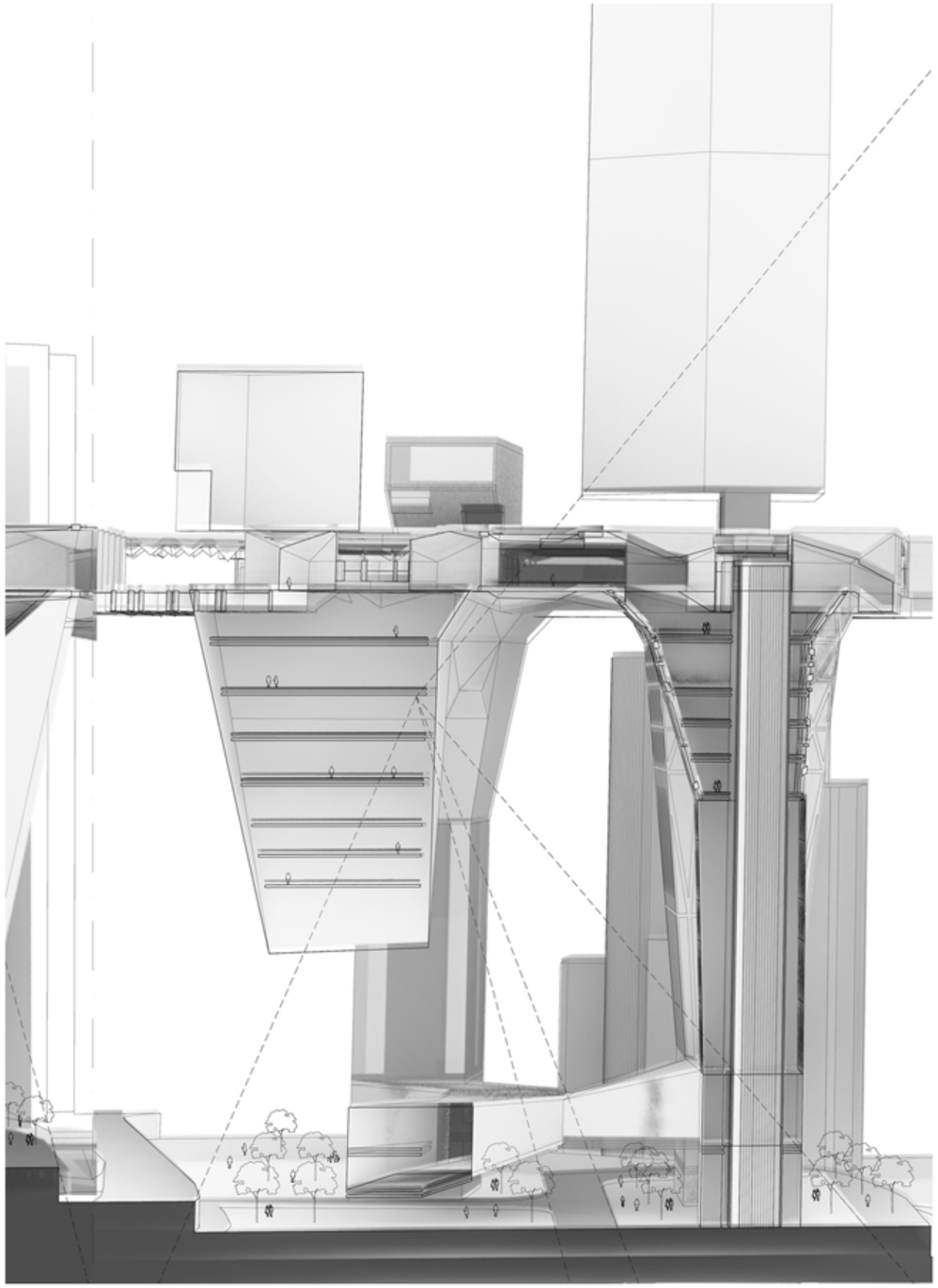


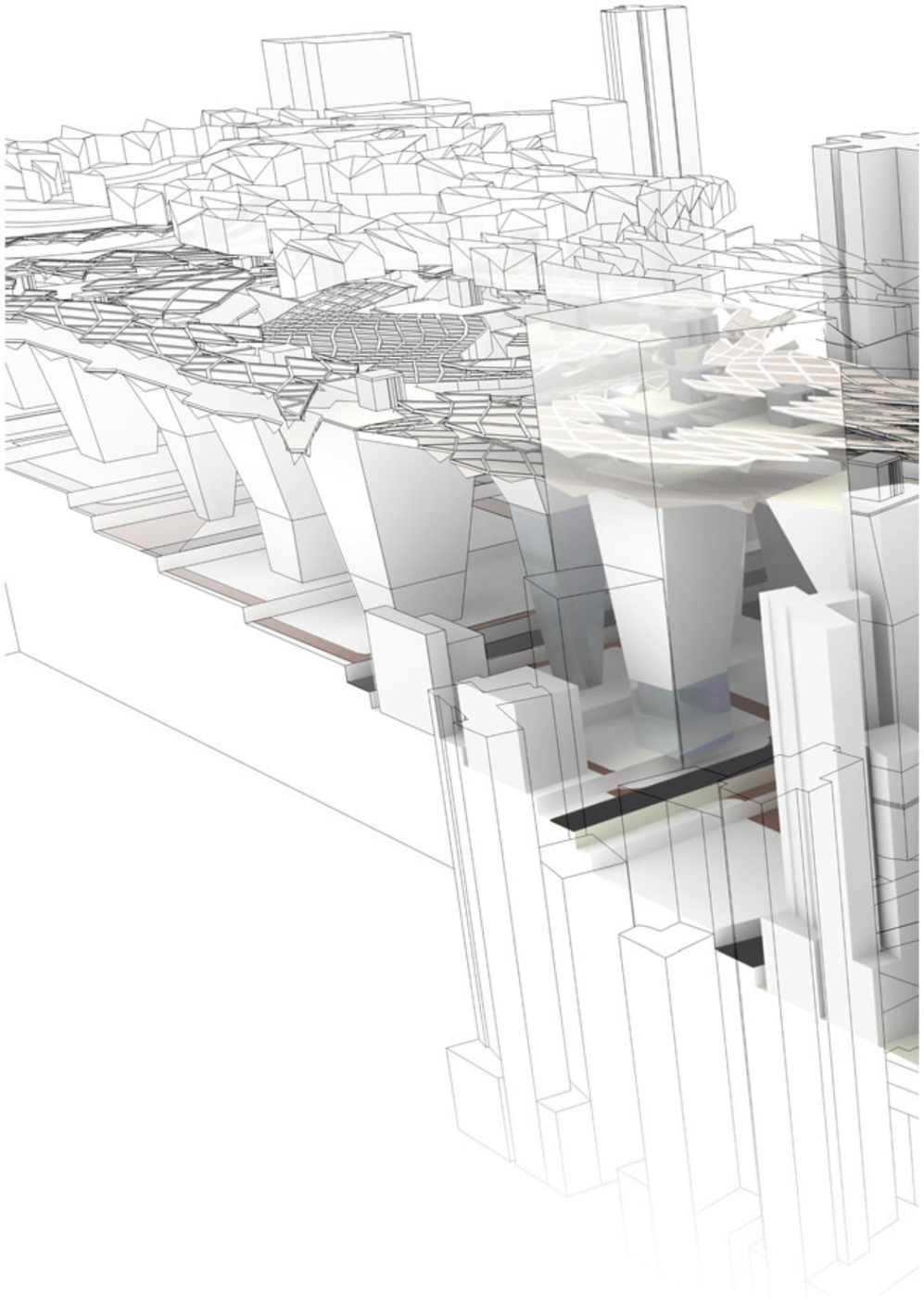


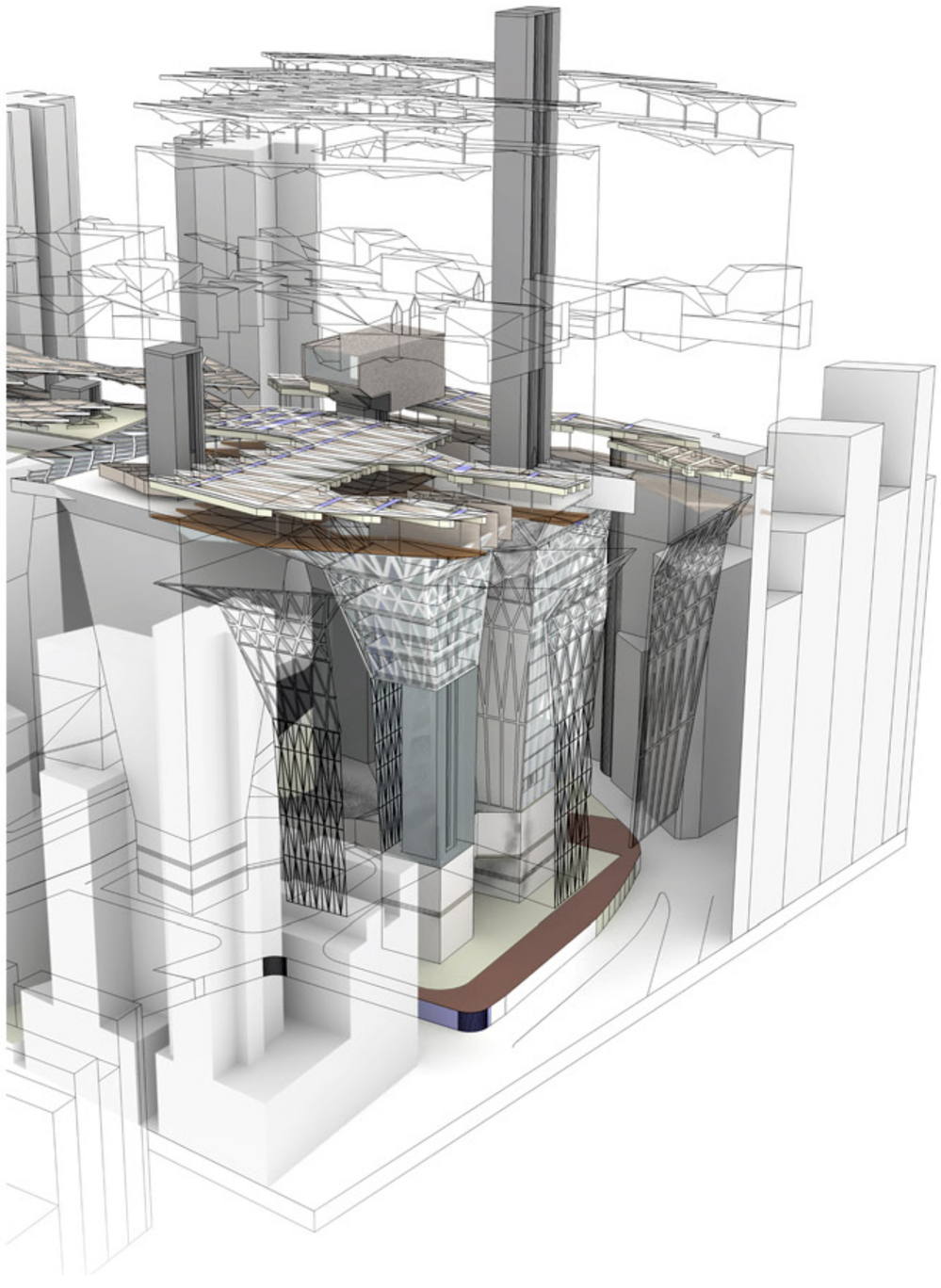


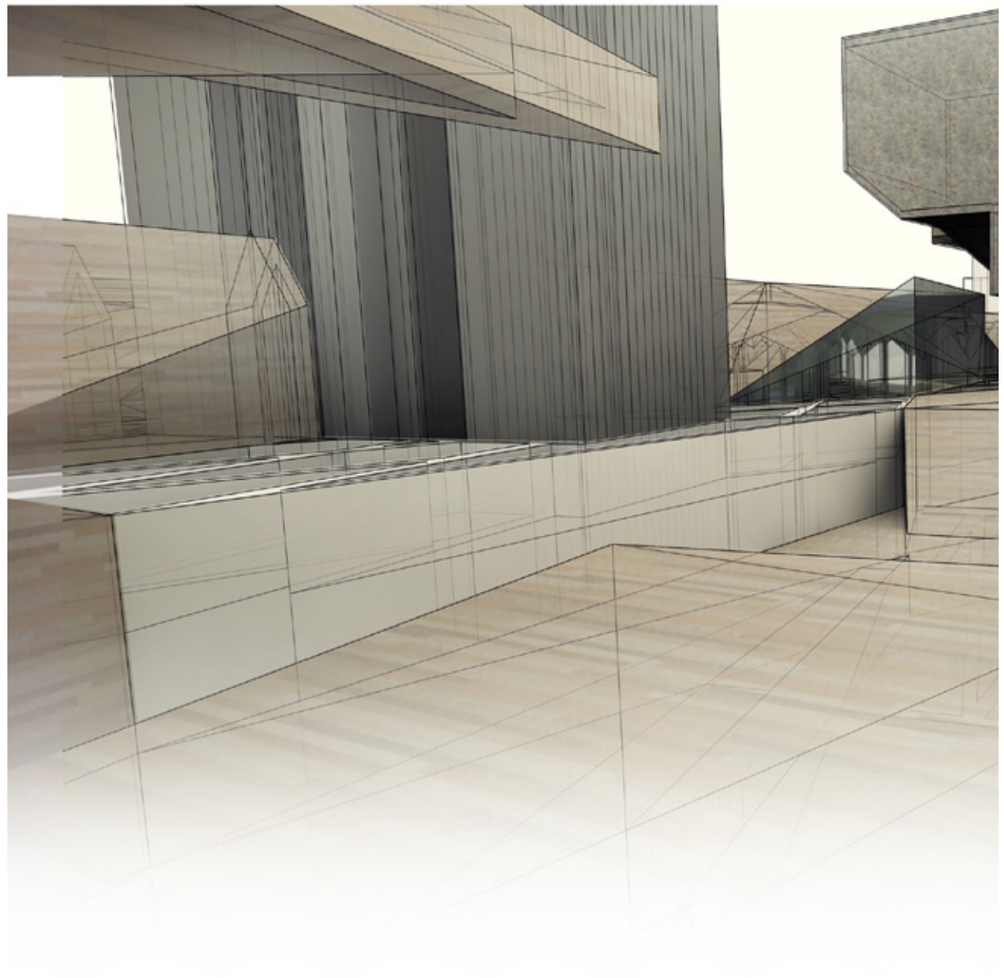


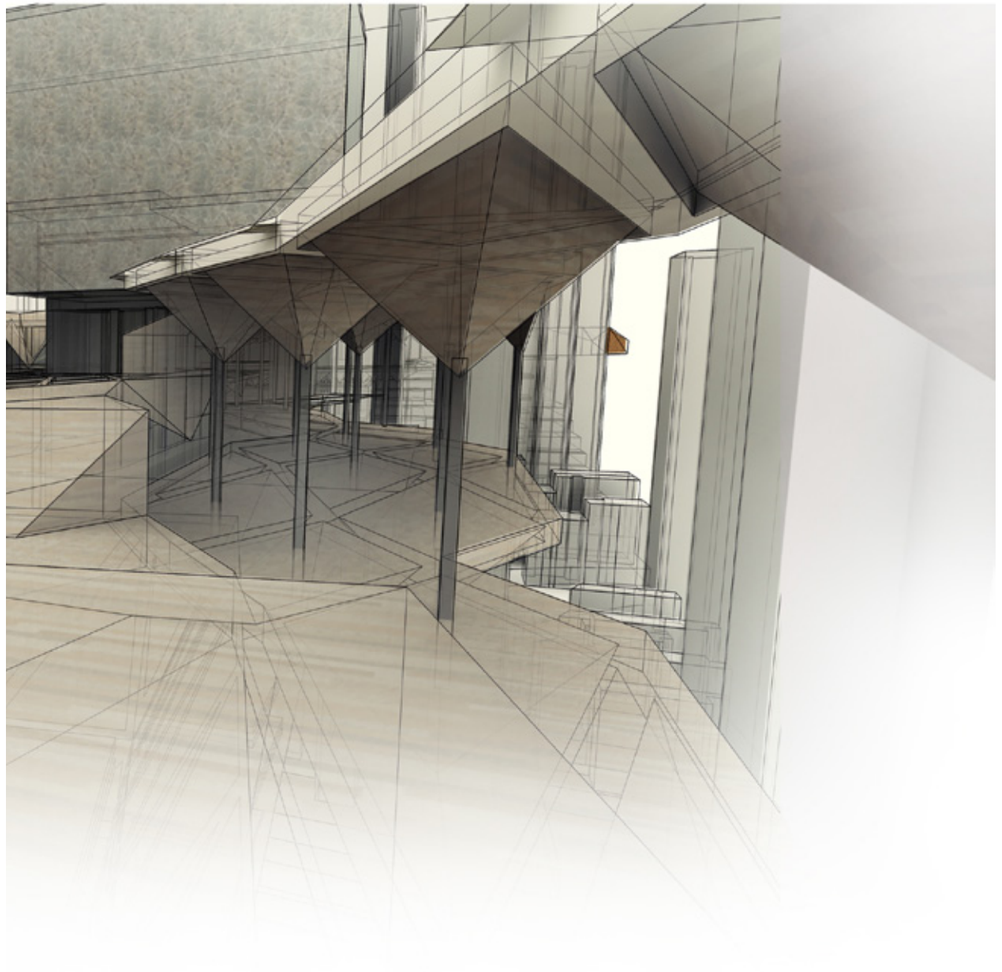


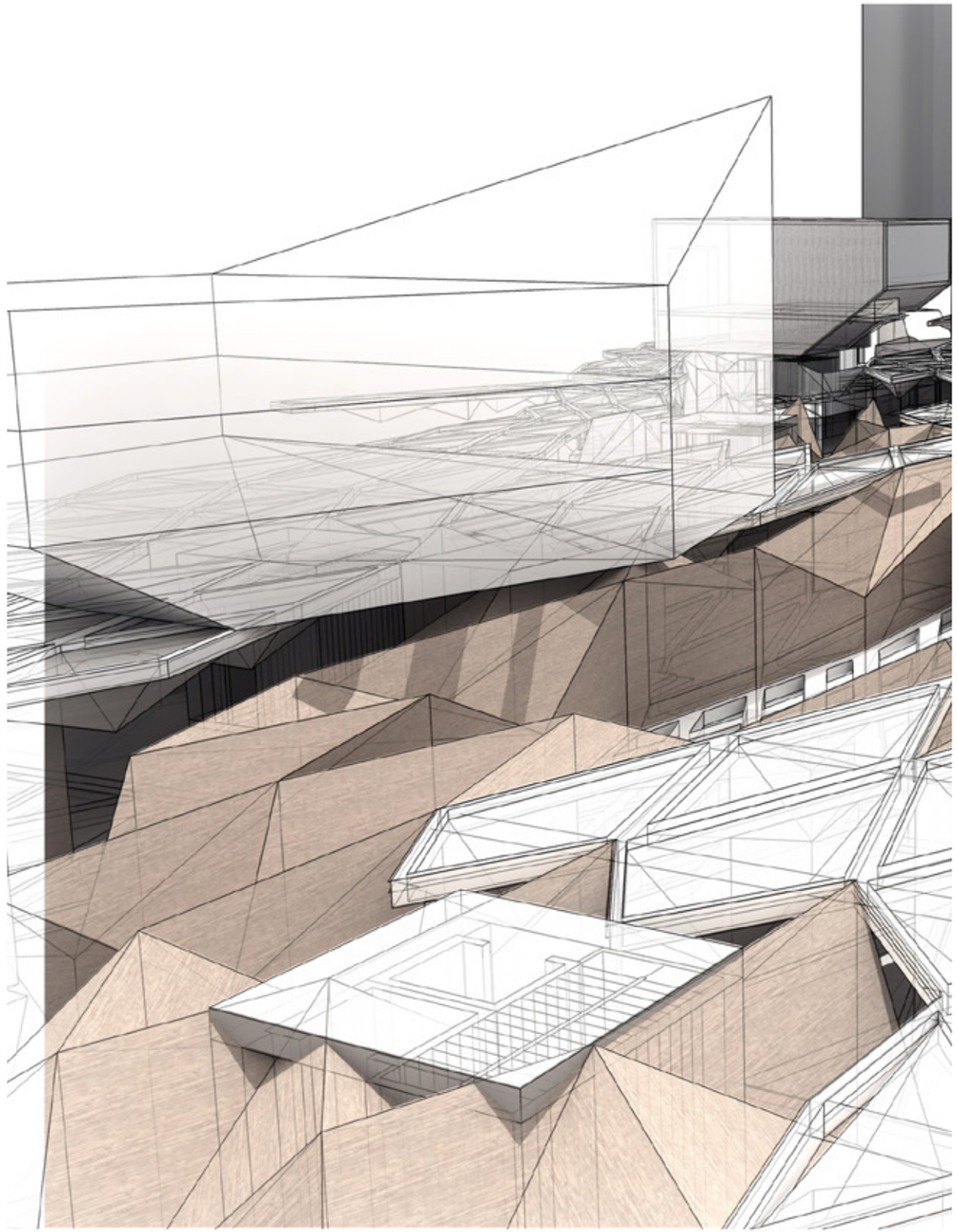


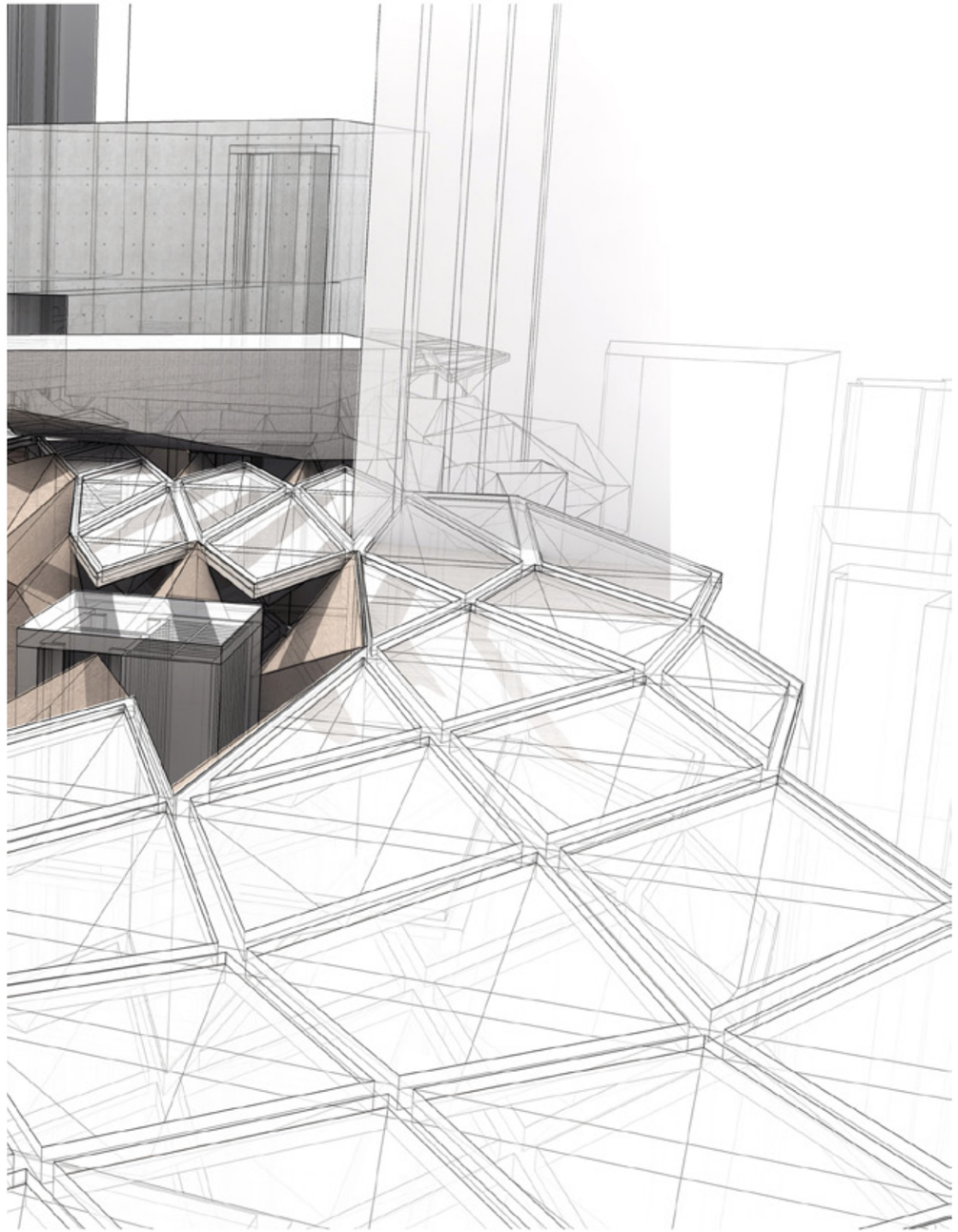


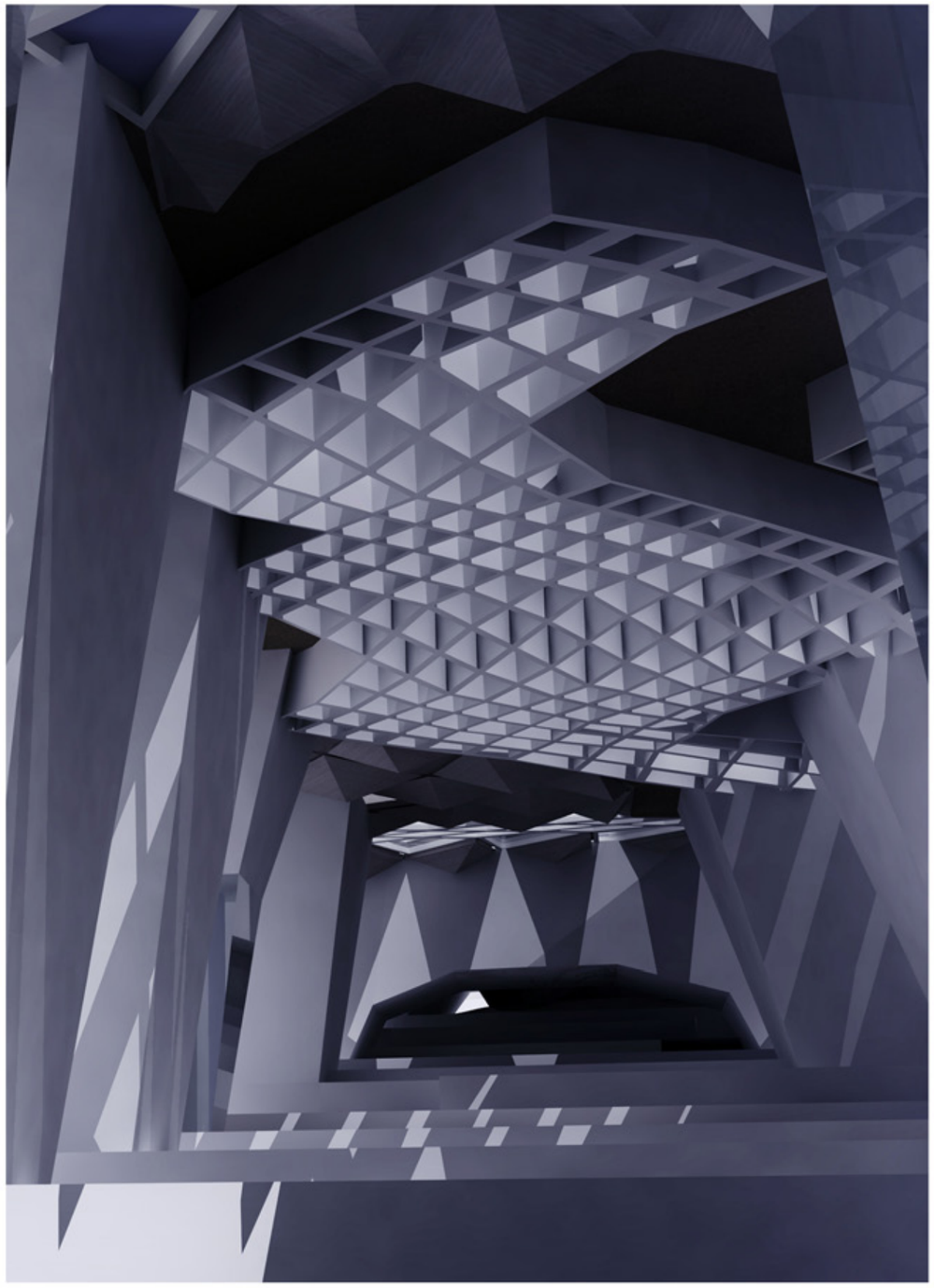


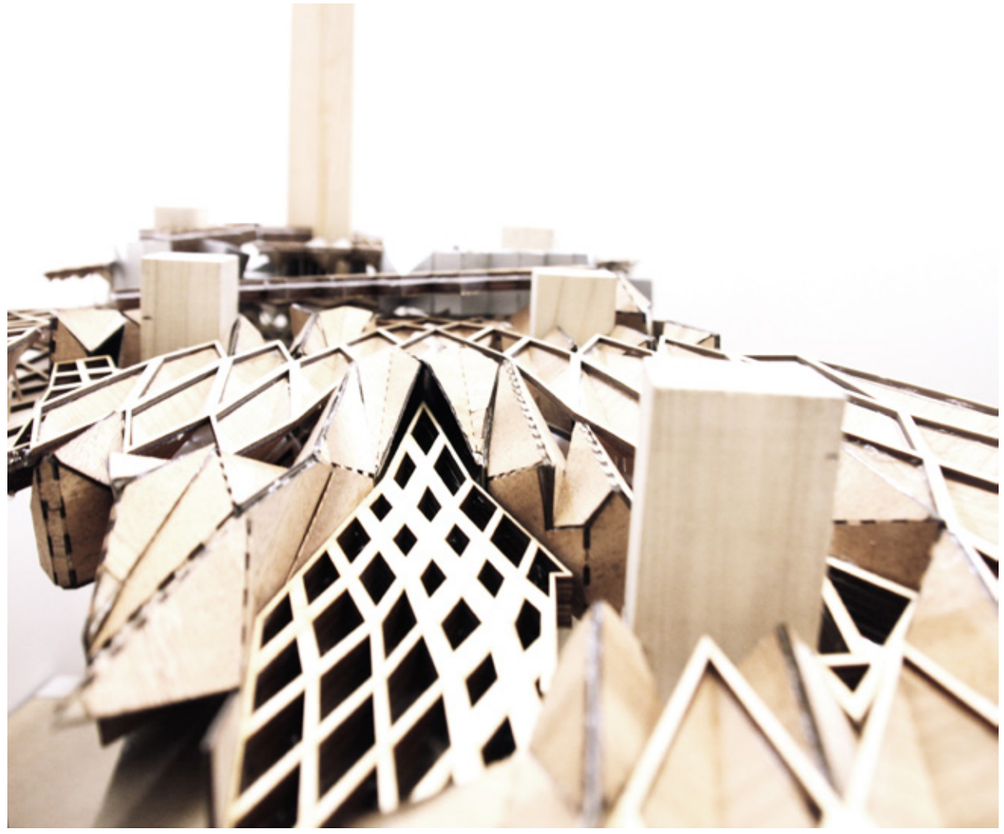


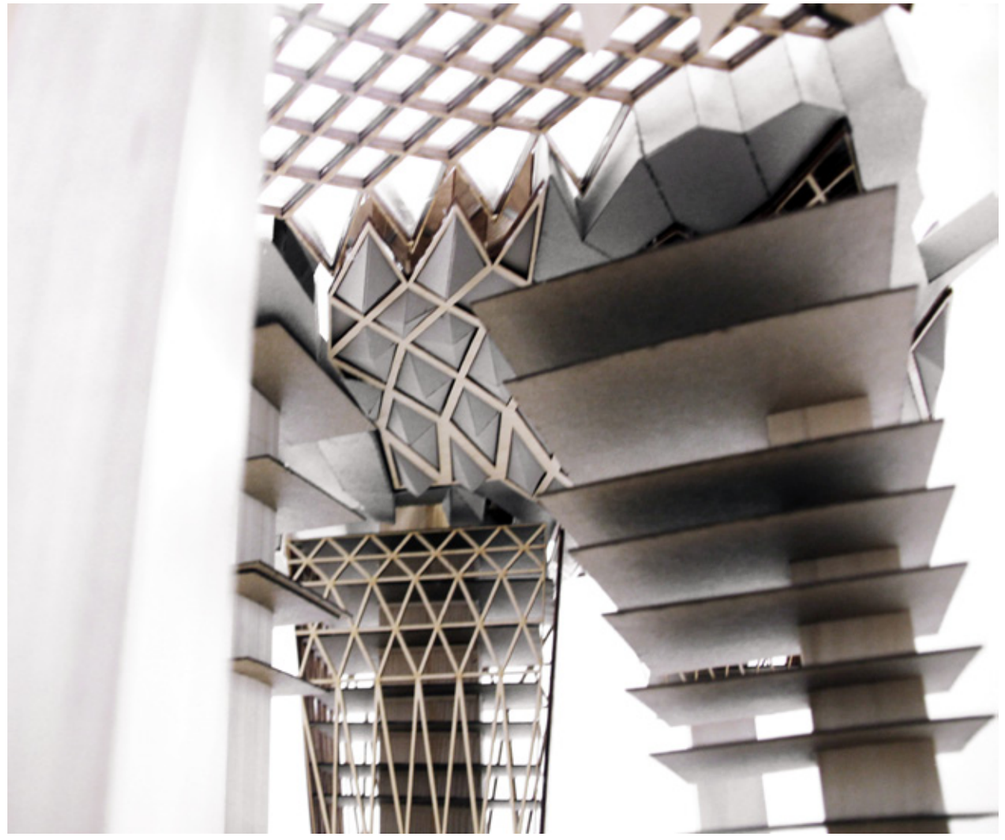


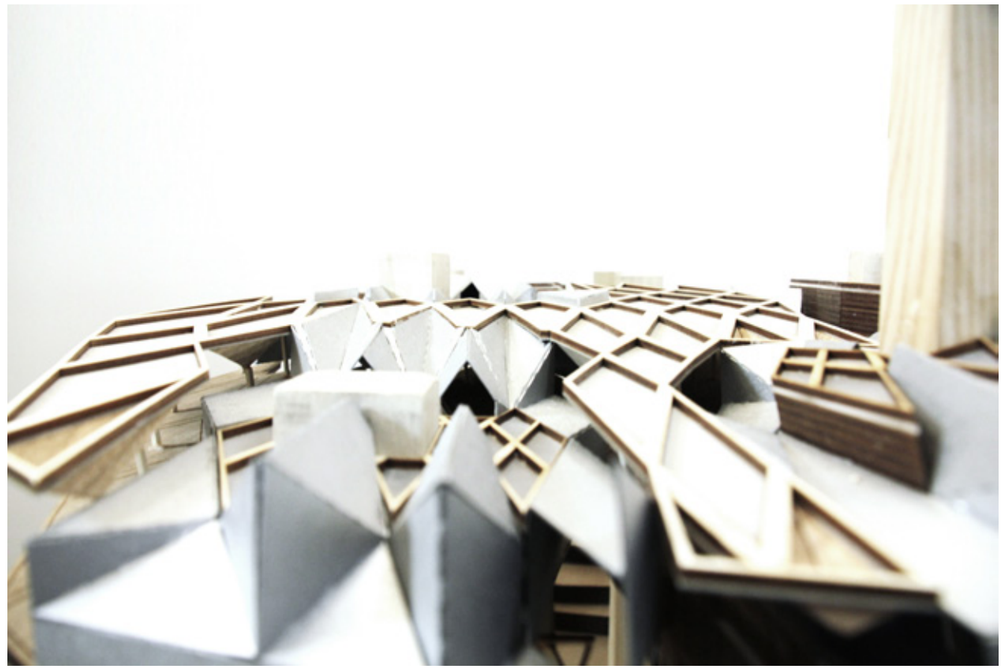


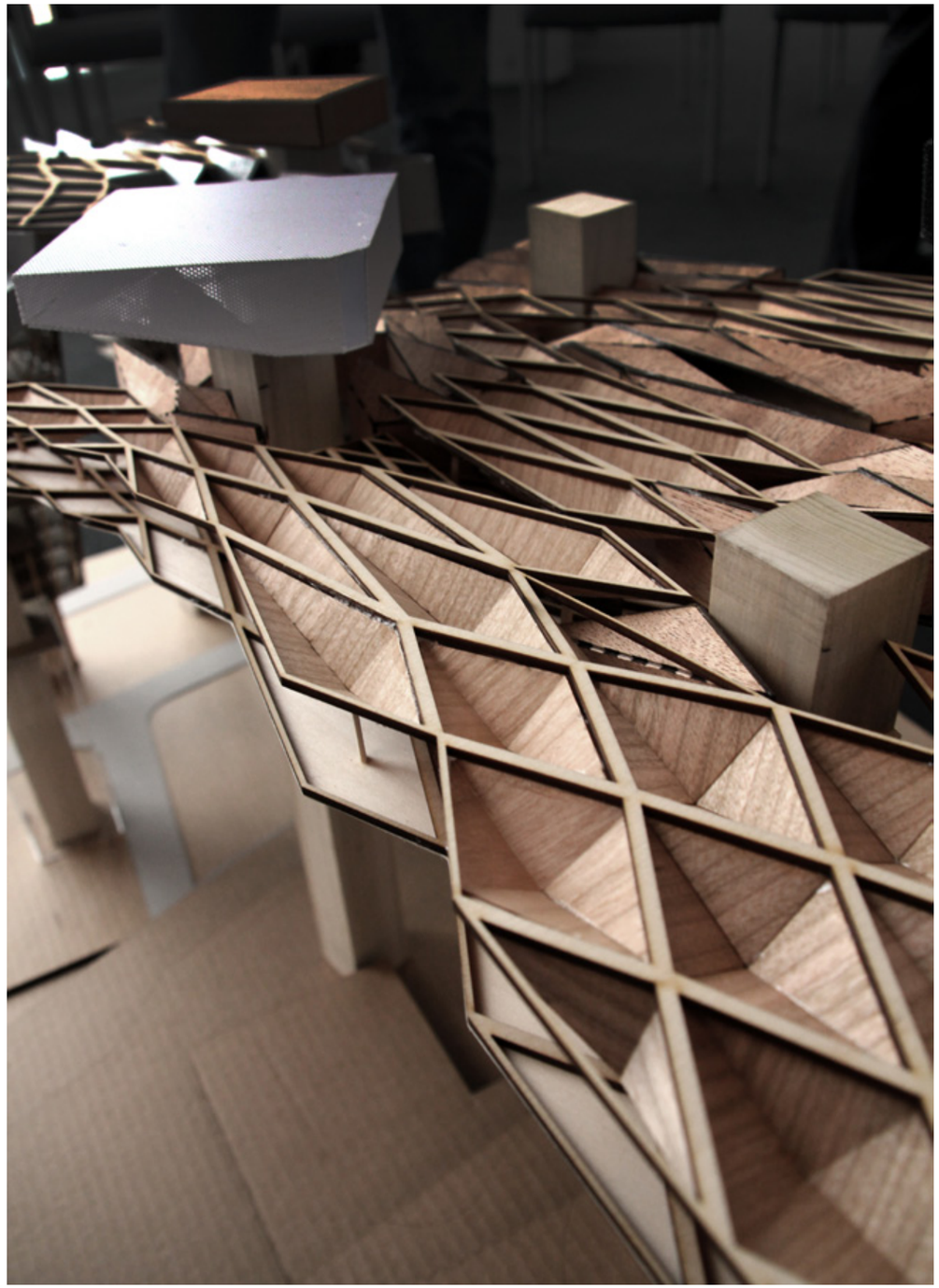












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